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COMPUTERWORLD

PC sales slumping

Compaq loses market share, but users aren't concerned

By Jaikumar Vijayan and Bob Francis

Some corporate users of Compaq Computer Corp. equipment last week said they wereo't unduly worried about the company's dramatic announcement of a sales slowdown for the current quarter.

The once untouchable Compaq today faces several pressing challenges to its leadership position in the PC industry, according to a random poll of Compaq users last week. But most said they fore-

Compaq, *page 16*

Rx for Compaq

Problem	Suggested remedy
Losing notebook market share.	Update technology; provide quicker time to market.
PC server growth slowed in Q4 1995.	Push industry-leading product bundling and integration; maintain price pressure.
Lower profit margins on high-end commercial PCs.	Maintain market share by cutting prices.

Latest 'spasm' of price cuts won't alter buying decisions

By Melissa Bane

While some pundits responded to the latest round of PC price-cutting by sounding the battle cry of PC price wars, jaded users last week said the good news is unlikely to affect their buying plans.

The cuts, from Compaq Computer Corp., IBM and Digital Equipment Corp. — some as high as 27% — were triggered by slumping sales. Users and analysts said they are merely the latest in a fairly predictable cycle of PC price reductions.

"I don't think this is a price war but more of a survivability issue for these companies," said Erik Goldoff, a computer specialist at the Centers for Disease Control and Prevention in Atlanta. He said companies are struggling to keep up with the faster rollout of new chips and as a result must work harder to build higher margins.

Other analysts attributed the sales slump to Intel Corp.'s speedy turnover of oew chips and the slower-than-expected adoption of Microsoft Corp.'s Windows 95, which was ex-

Price cuts, *page 16*

'net access pipe widens

By Mitch Wagner

Internet service providers UUnet Technologies, Inc. and MCI Communications Corp. will separately introduce connection plans for super-high-speed access to the 'net for commercial users.

The new services, which will debut today from UUnet and next week from MCI, were designed to appeal to users with high-traffic World Wide Web sites and large corporate offices that support hundreds or thousands of employees. Both services are also capable of transporting data-intensive applications, such as computer-aided design and manufacturing, over the Internet.

Bandwidth barrage

New bandwidth options between T3 and T1 broaden user choices

Service	Users supported simultaneously*
T3	2,100
10Plus	475
Double T	140
T1	70

*Approximate

Ken Faust, an instructor/manager at Bell Communications Research, Inc. in Lisle, Ill., said the high-speed services are very appealing. "Right now, I'm sharing a T1 line with 5,999 other people," he explained. "At the wrong time of day, if everyone is on, things crawl."

The new options will fill out the relative paucity of choices in high-speed connections and will let users upgrade their connections in steps.

"There's got to be a middle ground between T1 and T3 service, and there hasn't been until now," said UUnet user Richard Warren, vice president of information services at Judd's, Inc. in Strasburg, Va. Judd's prints magazines, including *Newsweek*, *Harper's* and *The Economist*. "I think what UUnet has to offer is a step up from T1 without stretching the technical envelope for the user and requiring the [telecommunications' companies] to adopt new technology."

The standard for high-speed corporate connectivity is the T1 line, which runs at 1.5M bit/sec. The next logical increment for most users is the T3 line, which can run a fire hose of data through it at

Internet access, *page 125*

WHAT'S INSIDE

- Attendees at Netscape's first user conference ooh and ahh over sharp price cuts, new Web servers and the promise of special intranet management tools. **See story, page 12,** *by Kim S. Nash.*
- Users faced with year 2000 compliance are at the mercy of consultants and vendors for programming assistance. **See story, page 10,** *by Thomas Hoffman.*
- Users hope to find Novell's long-term strategy at next week's Brainshare expo. **See story, page 14,** *by Laura DiDio and Tim Ouellette.*

Router software will merge WANs

By Bob Wallace

Router kingpins 3Com Corp., Bay Networks, Inc. and Cisco Systems, Inc. are finalizing software packages that will enable IS managers at IBM shops to consolidate their wide-area networks and boost performance.

All three companies will now offer High Performance Routing, which lets routers direct traffic around downed WAN links, and Data Link Switching, which lets users combine SNA and LAN traffic over IP networks.

"We have one network for SNA traffic, one for most everything else and a third for X.25 traffic, and we'd love to consolidate all that into one wide-area oetwork," said Manny Aguilera, senior systems programmer at Kaiser Permanente in Oakland, Calif.

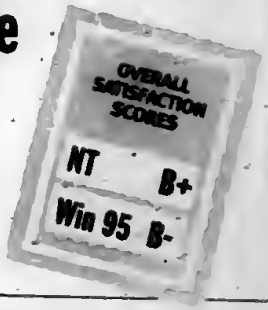
"These capabilities would be of great value to us because we could give time-sensitive traffic the highest priority

Routing, *page 125*

CW BUYER'S GUIDE

Experienced managers enjoy Win 95's ease of use but give the edge to NT. Page 87. Meanwhile, NT 4.0 scores well in a beta review. Page 45.

Users grade Microsoft operating systems



Newspaper

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March 11, 1996

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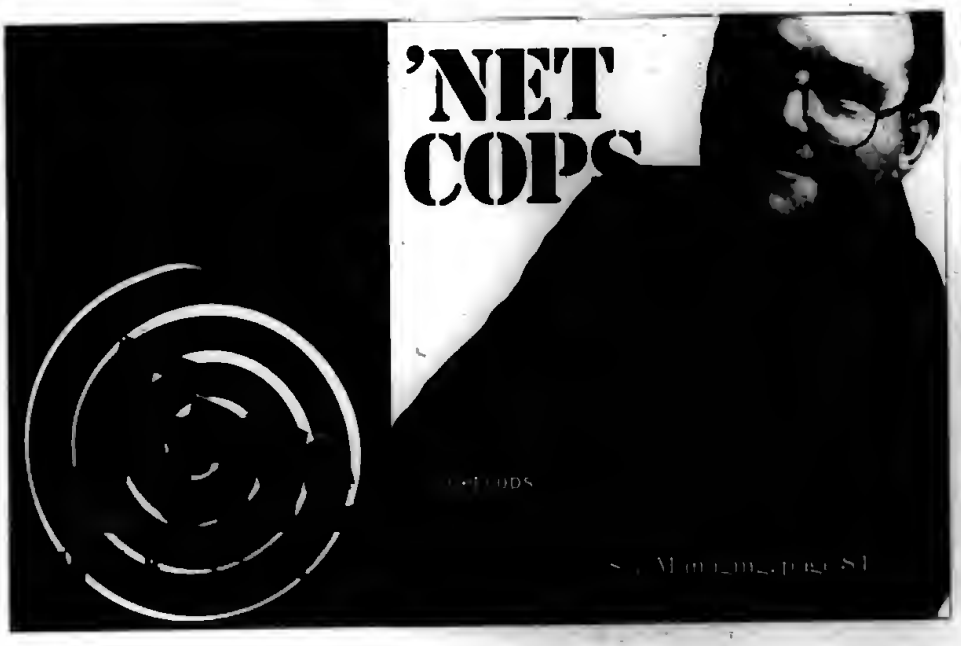

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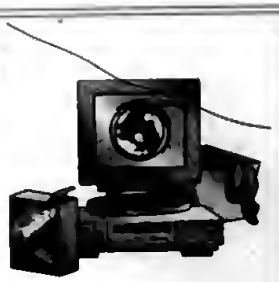

Traditional Mongol greeting at the Mongolian Web site

The people of Mongolia on Jan. 17 proudly turned oo their first full-time Internet connection, the *Washington Post* reports. They raised funds for the $200,000 Ioternet node (including a satellite dish) by selling surplus U.S. butter that was donated by the U.S. Department of Agriculture. Check out the land of Genghis Khan and camel breeders at **http://202.131.0.8/**.

Three teams of researchers achieved the Holy Grail of data transmission by sending information at a rate of 1 trillion bit/sec. through an optical fiber, *The New York Times* reports. That is equal to transmitting the contents of 300 years' worth of daily newspapers in one second.

A new California state law will let nonprofit organizations hold board meetings on-line. The law, pushed by the Nonprofit Exchange Online Network in San Jose, says on-line participation by board members qualifies as "presence in person."

The world's most prolific novelist, Ryoki Inoue of Brazil, has to replace his computer keyboard every five months because he wears it out, *The Wall Street Journal* reports. At last count, Inoue has written 1,039 books.

The National Consumers League io Washington is launching a program to combat fraud on the 'net, such as bogus get-rich-quick schemes, weight-loss miracles, AIDS cures and investment scams. Consumers can report cyber-fraud by calling (800) 876-7060 or sending E-mail to **nflc@internetmci.com**.

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Applications category (author, publisher)

1. *Word Perfect 6.1 for Windows for Dummies* (Margaret Young, IDG Books)
2. *Word 6 for Windows for Dummies* (Dan Gookin, IDG Books)
3. *Excel for Dummies*, 2nd edition (Greg Harvey, IDG Books)
4. *Using Access for Windows 95* (Roger Jennings, Que)
5. *Using Microsoft Office*, special edition (Sue Plumley, Que)
6. *Access for Dummies* (Scott Palmer, IDG Books)
7. *Using Excel 5 for Windows* (Ron Person, Que)
8. *Running MS Excel for Windows 95* (Mark Dodge, Microsoft Press)
9. *MS Works for Windows for Dummies* (David Kay, IDG Books)
10. *Myst: Official Strategy Guide*, revised edition (Rick Barba, Prima)

St. Patrick's Day has been designated Shareware Pay Up Day (SPUD), according to the Committee for Shareware Guilt Abatement. Paul Pease, a writer in Palo Alto, Calif., founded the group. Shareware scofflaws can ease their consciences March 17 by sending the measly $15 to $25 that most shareware publishers request. Abusers can find pointers to shareware publishers at **http://www.cootware.com/spud/spud.html**.

■ **Send contributions of off-beat news, lists and anecdotes to mbetts@cw.com.**

Richard and Mary Futter's Maytag Laundry in Deerfield Beach, Pa., is the first public laundromat in the U.S. to accept smart cards instead of quarters.

Digital Frontiers

Frustrated with clueless judges, experts in cyberspace law last week announced the Virtual Magistrate Project. The project was designed to help resolve computer network disputes through arbitration rather than slow and costly lawsuits.

Initially, the on-line arbitrators will take complaints about network messages and decide within three business days whether the system operator should delete or restrict access to the challenged material. For example, the complaint may contend the messages are obscene, defamatory, fraudulent or infringe on copyrights.

Cyberspace denizens can file complaints by using a form on the Virtual Magistrate's World Wide Web site (*http://www.law.vill.edu:8080/*).

"[On-line] disputes are inevitable, and existing courts can be too slow, too cumbersome and too local to have global effect," said Timothy C. Leixner, chairman at the National Center for Automated Information Research, a project supporter. Other supporters include the Cyberspace Law Institute and the American Arbitration Association.

But the project is very much experimental, with a meager budget of $75,000. A conference will be held in May to evaluate the pilot and consider a more permanent structure.

Top Internet software in 1995

1. Internet in a Box *(CompuServe)*
2. Netscape Navigator Personal Edition *(Netscape)*
3. Internet Starter Kit *(Eclipse)*
4. Adobe Pagemill *(Adobe)*
5. Internet Membership Kit for Windows *(Ventana)*
6. Netscape Navigator 95 Personal Edition *(Netscape)*
7. Internet Publishing Kit *(Ventana)*
8. Netscape Navigator *(Netscape)*
9. Eudora Pro *(Qualcomm)*
10. WebAuthor *(Quarterdeck)*

Source: PC Data, Inc., Reston, Va.

SAP AG boards 'net bandwagon

By Julia King

SAP AG this week will join the on-line charge and unveil several software enhancements that enable its R/3 client/server applications to work over the Internet.

The oew software — some of which users will receive as part of regular R/3 upgrades — will be delivered by the end of the year, *Computerworld* has learned.

SAP will demonstrate the new capabilities in three different business scenarios at this week's CeBit trade show in Hannover, Germany.

Essentially, what SAP is doing is "wrapping middleware around R/3 client software to reach the Internet," said Evan Quinn, research manager of application development tools at International Data Corp. in Framingham, Mass.

An added bonus for users, Quinn said, is the potential for much more attractive and user-friendly screens in R/3 on the client side.

Under SAP's first business-to-business scenario, two hypothetical companies' R/3 systems will be linked over the Internet to process orders in real time. The first company's R/3 system will send an order, which automatically will trigger a series of events (such as inventory and price checks) in the second company's R/3 system.

"The transactioo will be placed through the Internet and come out on the other side without having the ping-pong of electronic data interchange or fax messages," said Paul Wahl, CEO of SAP America, Inc.

Users see several advantages to this type of Internet integration.

"It simplifies the transactions process, plus you can make it available to a much wider audience," said Gary Banks, director of the technical excellence center at Monsanto Corp. in St. Louis.

"Without doing anything special, you could let the appropriate people into your system," Banks said. For example, key customers could modify a supplier's prodoction schedule by accessing the supplier's R/3 system over the Internet.

Under a second consumer-to-business scenario, a customer using a desktop World Wide Web browser can electronically order from a Web-based catalog that is linked to an R/3 system at the back end.

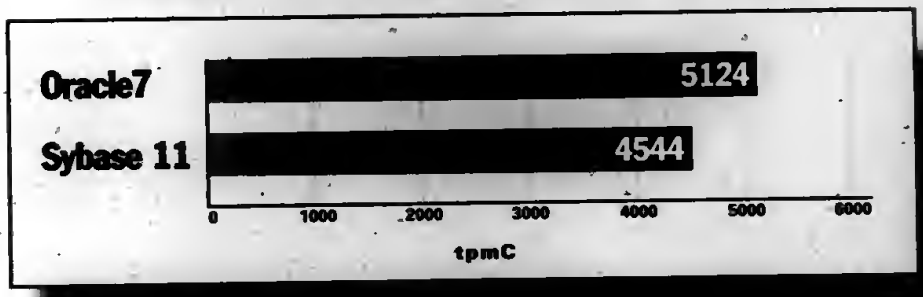
The third scenario is an intranet application under which internal users could use a Web interface to access and update R/3-based information, such as personnel data.

Wahl said SAP is working with several partners to develop the R/3 Internet capabilities, but he declined to detail exactly what is under the hood of this week's enhancements.

Oracle7 Outshines Sybase on Sun

The TPC-C benchmark is the industry standard test for measuring database On-Line Transaction Processing (OLTP) performance.

Fastest Transaction Rate on Sun



Best Price/Performance on Sun

When Oracle and Sybase were tested on a 16-cpu Sun Solaris system, Oracle clearly out-performed Sybase System 11 on price and performance. (It's almost not worth mentioning, but we also creamed Informix.) Just one more proof point that Oracle7 is faster, cheaper and better. Think about it. Then call Oracle, 1-800-633-1071, ext 8118.

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Outsourcers zero in on intranets

HP/AOL service for corporate users

By Craig Stedman

Outsourcing sharks are starting to circle in the corporate intranet waters.

Hewlett-Packard Co. and America Online, Inc. this week will announce they are teaming up to build and manage intranets for resource-conscious customers. Their offering combines HP's Unix servers and sales channels with AOL's backbone network, firewall and user support services.

The HP/AOL pairing was preceded last week by a similar outsourcing option from Infonet Services Corp. in El Segundo, Calif. Infonet is offering multinational companies an intranet and LAN management scheme and a set of on-line applications that run over the company's global network.

Analysts said they expect a rush of similar announcements as network providers and server vendors realize the potential of the emerging intranet business. Intranets are private, internal company setups that operate over protected portions of the Internet. The internal networks use World Wide Web browsers on PCs.

Outsourcing options

Analysts say companies should raise the following issues with intranet outsourcers:

- Guaranteed network bandwidth and throughput levels
- Provisions for firewalls and other security mechanisms
- Help desk staffing levels and hours of operation
- Future impact of adopted applications such as multimedia
- Integration of intranet with business applications

More providers expected

HP/AOL and Infonet "are certainly going to have a lot of competition as people jump on the intranet bandwagon," said David Whitten, an Internet and workgroup systems consultant at Gartner Group, Inc. in Stamford, Conn. Intranets that consolidate electronic mail and other internal communications around Internet protocols lend themselves to outsourcing much more than do typical corporate networks, which have a mishmash of different mail systems, he said.

AT&T Corp. just dropped its proprietary Notes-based network offering and will embrace the intranet concept as part of its revamped Internet strategy, analysts said.

Vendors such as IBM, MCI Communications Corp. and Sprint Corp. also are expected to target intranet outsourcing services.

Growing expectations

Intranets provide a way to "blow out a more consistent infrastructure" to desktop users, said Paul Hoedeman, chief information officer at AlliedSignal Aerospace in Torrance, Calif. "The intranet is a big thing for us already, and it's going to explode as we put Web capabilities on everybody's desk."

The aerospace unit, which uses HP servers and workstations, has more than 4,000 users on small, local intranets.

Within 16 months, the company plans to connect its 38,000 desktops to an intranet framework that would be used for collaboration and dissemination of work instructions and company policies.

Hoedeman hadn't been briefed on the HP/AOL outsourcing plan, but he said he expects to discuss it with HP officials. "We're closely aligned with HP, and in general, I'm open-minded about outsourcing things," he said. "So I'll listen closely to what they have to say."

Customers who swallow the HP/AOL bait will have bandwidth carved out for them on AOL's national ANSnet TCP/IP backbone. ANS is an AOL unit in Elmsford, N.Y., that runs ANSnet.

ANS will handle systems integration and network operations. Help desk services will be provided by AOL. End users could be equipped with Web browsers or AOL's user interface, officials from the companies said.

HP seeks help from vendors such as AOL as it tries to catch Sun Microsystems, Inc. and Silicon Graphics, Inc. in the Web server market, said Clay Ryder, an analyst at Zona Research, Inc. in Redwood City, Calif. "Obviously, HP is behind in the whole Web area," he said.

Schools have a lot to teach about intranet deployment. See page 69.

Users shrug off hype over Internet-enabled programs

By Lisa Picarille

Adding Internet capabilities to applications is all the rage among leading software developers. But some users think the hype is just a ruse to get them to upgrade their applications.

"Sometimes I wonder if some of these developers think I am naive enough to believe that every application I own needs to have Internet capabilities," said an information manager at a large East Coast manufacturing company who requested anonymity. "The developers are just vying for perceived huge dollars that they think people are willing to spend on anything that has the word 'Internet' on or associated with it."

No 'net charges

Microsoft is offering its Internet capabilities as a free add-on via the 'net.

Internet-enabled applications have features such as the ability to automatically convert documents and spreadsheets to Hypertext Markup Language, the automatic conversion of graphics files to the graphics interchange format, the ability to create hyperlinks within documents and the ability to directly access the World Wide Web from within applications.

In general, most developers are adding these capabilities to their productivity packages.

Steve Semorile, a systems analyst at Chevron Corp. in San Ramon, Calif., said adding Internet features to productivity applications can help solve some ongoing problems. It can, for example, help improve remote access, promote working in groups and eliminate cross-platform incompatibilities.

"We are dealing with a huge number of documents and a complex document management system," Semorile said. "Having Web-enabled applications from Adobe and other developers helps us give remote sites access to things they might not be able to otherwise get at."

"We also don't have to worry about which type of machines users are using to access information from our intranet or from the Internet. The flow of information is better, and that's what matters," he said.

Still, many users don't appear to be too interested right now. For example, Brian Peabody, director of end-user computing at Prime Consulting Group, Inc. in Atlanta, said the Internet capabilities available are basically limited to what he can already do in his browser.

"Vendors are under the impression they have to add this, or users will think their products are not current," said Chris Le Tocq, an analyst at Dataquest, Inc., a market research firm in San Jose, Calif.

"I think everybody is adding Internet capabilities as a defensive move," said Jeff Silverstein, editor of "The Software Industry Bulletin," a newsletter in Stamford, Conn. He said developers see the Internet as an opportunity to dominate a new segment of the market and are jockeying for position before Microsoft Corp. jumps in.

But Microsoft is already working on, and in some cases delivering, free Internet add-ons to its popular applications. Those Internet features will be integrated into future releases of the applications, and users will have to pay for the upgrades.

Cyber apps

Leading software developers plan to build Internet capabilities in to their products

Microsoft	
Word Viewer for Windows 95	*Now*
PowerPoint for Windows 95 HTML Add-In	*This month*
Internet Assistant for Word for the Macintosh	*In beta now*
Lotus	
(Includes SmartSuite, 1-2-3, Freelance Graphics, Approach and Organizer)	
Corel	
Corel Office Professional 7	*June*
(Includes WordPerfect, Quattro Pro, Presentations, CorelFlow, Envoy, Netscape Navigator, Starfish Software's Dashboard and Sidekick, InfoCentral, Paradox and Grammatik)	
Adobe	

Other software heavyweights, including Lotus Development Corp., Corel Corp. and Adobe Systems, Inc., also have outlined plans for new versions of their products that include Internet capabilities. Most of these enhancements will start showing up by summer (see chart).

"Users may not want or need these features now, but in their typical 'give-me-more' fashion, they will eventually demand it," said Jeffrey Tarter, editor of "The Softletter," an industry newsletter in Watertown, Mass.

Semorile warned that the addition of Internet capabilities to an application has to make sense. "I'm not sure things like CorelDraw need to be Internet-enabled. Although, I'm sure they could find some way to make a case for it."

Adobe adds Internet capabilities to grab at electronic publishing market. See page 70.

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Notes support upgraded

Lotus hopes to retain big customers

By Tim Ouellette

Lotus Development Corp. hopes to hang on to its biggest Notes customers by offering them easy access to technical support as they roll out Notes 4.0 across the enterprise.

The new Enterprise Support Program gives the largest users of Notes groupware on-site support planning, a dedicated manager, telephone support, 24-hour emergency assistance and other features for a single yearly fee (see chart).

"We think it is very promising. It appears to be a step in the right direction," said Rowan Snyder, principal and chief technology officer at Coopers & Lybrand. The New York firm, which has about 33,000 Notes users worldwide, is looking into the program, he said.

Other users interviewed gave Lotus generally low marks for its support in the past but said the Cambridge, Mass., subsidiary of IBM seems to be turning things around with Notes 4.0.

The $165,000 single fee reduces administrative hassles for both Lotus and the customer, a Lotus official said. She added that Lotus is talking with IBM about leveraging IBM's enormous worldwide support organization.

Microsoft charges $40,000 and Oracle charges $75,000 for premium support programs. But it is hard to make direct comparisons because each program has different features.

For Notes sites with thousands of seats, the Enterprise Support Program goes beyond Lotus' traditional Passport support package to offer more services and a higher level of support.

However, while Lotus has cut prices on Notes itself, the fees for Passport support haven't dropped. Lotus is looking into the possibility of changing the pricing structure for other Lotus support programs, but nothing has been decided, said Kathleen Ahern, Lotus' support programs manager.

Deal breaker

And Lotus, like many other vendors, doesn't provide direct support to on-line product forums, although improvements are in the works. Such free support for simple questions led one user to choose a competing groupware product over Notes.

"If [a vendor] can't provide electronic support for their non-emergency issues, I don't go with them," said Ed Hess, owner of a Ziebart Tidy Car franchise in Audubon, N.J.

But customers are seeing improvements in the way Lotus approaches some Notes user concerns. They cited a greater focus on support issues at this year's Lotusphere conference, well-established training programs for Notes 4.0 and more seminars and resources to help with the migration from Notes 3.x to 4.0.

Omega shopping

- A dedicated support manager
- Around-the-clock telephone support
- Emergency assistance
- 12 days of on-site visits by Lotus technicians to fix problems and review potential problem areas
- Start-up help for Notes installation, configuration and IS department training

Corel to make WordPerfect suite-only

By Lisa Picarille

Just a little over a month after purchasing Novell, Inc.'s Business Applications Group, Corel Corp. plans to stop selling the popular WordPerfect word processor as a stand-alone product and will make it the centerpiece of three new suites.

Last week, the Ottawa-based company outlined plans for three new packages of the Microsoft Corp. Office variety — Corel WordPerfect Suite, Corel Office Professional and Corel Office Professional 7. All will include WordPerfect and a handful of Corel's own products.

Corel also plans to lower the price of the WordPerfect Suite, formerly called PerfectOffice — it will cost the same as the stand-alone version of the word processor — to better compete with market leader Microsoft.

"We are trying to leverage the popularity of the stand-alone word processor to seed the market with the other [Novell and Corel] applications," a Corel spokeswoman said.

Although WordPerfect has 56% of the stand-alone word processor market, according to last year's figures from Computer Intelligence/InfoCorp in La Jolla, Calif., most businesses don't purchase their word processors as stand-alone products.

While most observers agreed that Corel is on the right track with its forthcoming suite, one user said the move to expand its capabilities is coming too late.

"We are really just watching the market and trying to pick the right time to jump ship to Microsoft Office," said John McGee, a World Wide Web developer in the finance and information management department at the University of California at Los Angeles.

"We don't really want to be an all-Microsoft shop, but we are starting to feel like there is no other choice," McGee said. "Perfect-Office is ahead of Microsoft Office in terms of technology, but the suite is not as integrated, and we also need the better database capabilities offered by [Microsoft's] Access."

News Shorts

Foreign programmers win one on the Hill

Silicon Valley won a victory last week when Sen. Alan Simpson (R-Wyo.) agreed to remove provisions from a bill that would have made it harder to hire foreign programmers and other technical workers. The language would have significantly cut the number of foreign workers who can be hired under special work permits and would have required U.S. firms to contribute $10,000 per foreign worker hired to a government fund for retraining U.S. workers. Similar provisions remain in a House version of the bill.

America Online gets EWorld

Apple Computer, Inc. said users of its EWorld on-line service will be transferred to **America Online, Inc.**'s subscriber base. Apple plans to shut down EWorld by April 1. The agreement to transfer subscribers is part of a broader cooperative agreement between the two companies. They will work on programming and service efforts, and Apple will include AOL software on many of its PCs.

Oracle 8.0 to ship late

Oracle Corp. said Version 8.0 of its relational database management system will be released in mid-1997, 1½ years after a company executive had said it would come out. Jnan Dash, Oracle's vice president of database technology, said Oracle 8.0 will go into beta testing around July. He said the time from beta testing to general release is about one year. In June 1994, Tim Shetler, who was then Oracle's vice president of product marketing, said Oracle 8.0 would ship by the end of 1995.

IBM puts CICS for NT on hold

IBM has put the brakes on a 32-bit version of its CICS transaction software for Windows NT. It was to be unveiled later this month along with a 32-bit CICS for OS/2 release. But IBM said the company is debating whether to keep CICS for Windows NT on the same code base as the OS/2 product or switch it to the more robust code used by Unix versions of CICS.

Intel talks multimedia

Intel Corp. announced the details of its MMX technology at the Intermedia World conference last week in San Francisco. The technology will let software developers write sophisticated multimedia and communication applications for PCs. MMX technology will be integrated with the Intel architecture starting with the P55C, a code name for a Pentium processor that is expected to be released in the fourth quarter.

Sun shows 'net terminal

Sun Microsystems, Inc. plans to build 300 low-cost Internet devices for select customers to test during the next several months. Eric Schmidt, Sun's chief technology officer, showed off a prototype last week at the **Netscape Communications Corp.** developer show in San Francisco. The 5- by 9- by 2-in. box ran a 110-MHz SPARC chip. It had no hard disk and 8M bytes of memory. For more details, see **@Computerworld** (http://www.computerworld.com).

Management added to OLE

Microsoft Corp.'s OLE protocol will get its own management services, which should enter the design and review process this summer. A final specification could be published later this year, which will allow software and management tool vendors to build links to manage OLE applications across an enterprise network by using standard protocols.

SAP benchmarks improve

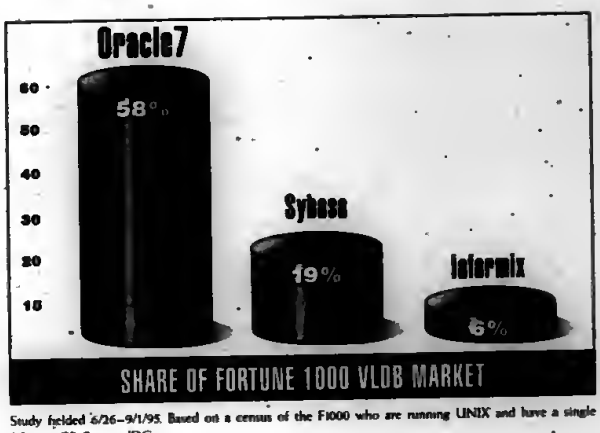
SAP AG has cleaned up its act by codifying its benchmarking procedures and publicizing data on its benchmarking methods, according to Illuminata, Inc., a Nashua, N.H., consultancy. Illuminata is the same firm that dressed down the applications vendor last September for what it referred to as "beneath the counter" benchmarking practices.

SHORT TAKES **Philips Consumer Electronics Co.** in Knoxville, Tenn., named Kenneth Craig its vice president of information systems and chief information officer. ... William Krivoshik was named CIO at **Financial Guaranty Insurance Co.** in New York.

Data Warehouse Comparison

Data warehouses are central information repositories for storing and analyzing vast amounts of historical and reference data from a number of different sources. Oracle7 has many more features for data warehousing than any other DBMS.

Features	ORACLE7	Sybase System 11	Informix 7.2
[redacted]	Lots	Zero	None
	Yes	Not Quite	Yes
	Yes	No Way	No
	Yes	Nope	Yes
	Yes	Yes	Yes
	Yes	No	Yes
	Yes	Never	No
	Yes	Nope	No
	Yes	Yes	No
	Yes	No Way	No
	Yes	No	No
	Yes	Sorry	No
	Yes	Nyet	No
	Yes	Not	Yes
	Yes	Never	No



Study fielded 6/26–9/1/95. Based on a census of the F1000 who are running UNIX and have a single DB ≥ 50GB. Source: IDC

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Timing is right for Cobol programmers

By Thomas Hoffman
NEW YORK

Sure, everyone is aware of the nagging year 2000 date change problem that's hovering over IS like a dark cloud.

But who's going to fix it?

How about that 53-year-old Cobol programmer you laid off last year — at $65 per hour.

Short-staffed information systems managers who face the added problem of finding bodies to fix millions of lines of legacy code shared strategies last week at the Year 2000 conference sponsored by Software Productivity Group, Inc.

Experts say changes will be necessary when two-year date fields become "00" instead of "99." Time-sensitive programs that handle everything from insurance policies to drivers' licenses could crash or deliver inaccurate information if they mistakenly recognize 01/01/00 as Jan. 1, 1900.

Gartner Group, Inc. and other think tanks estimate it will cost companies from 50 cents to $1.50 to fix each line of affected code. That's a big chunk of change for firms such as BankAmerica Corp., which has identified 95 million lines of time-sensitive code to be tweaked.

"We've estimated that we're going to have to go through 2,700 lines of code an hour [from now until Jan. 1, 2000] to get through this," said Howard Adams, a vice president at the San Francisco bank.

"Even if you know what the problem is, where do you draw the resources to deal with it?" Adams asked.

Financial drain

That problem vexes IS shops large and small. For example, Houston General Insurance Co. in Fort Worth, Texas, began working on its year 2000 problems in earnest last March. But the insurer, which expects to spend between $800,000 and $1.2 million to patch its systems, has only 11 programmers on staff.

Houston General, like other firms, probably will be forced to bring Cobol programmers in-house at a cost of $55 to $65 per hour, according to Nannette Samuelson, manager of application services at the firm.

Year 2000 ramifications

- Credit cards and drivers' licenses will expire
- Billing systems will show 100 years of debt
- Toddlers will receive Social Security checks
- IRS systems will show tax revenue no longer due

Source: Tactical Strategy Group, Inc., Aptos, Calif.

"The market for Cobol programmers is ready to blow open," she said.

The outlook also is cloudy for Philadelphia Gas Works, which recently "downsized" six IS staffers out of what had been a group of 59, according to Elizabeth A. Kustra, business systems services manager at the utility.

The firm needs to fix code for its time-sensitive, IBM ES/9000-based customer billing systems so its customer statements aren't thrown out of whack.

"If it costs a million dollars to do the conversion, then we'll have to do it," Kustra said, referring to the utility's 1 million to 2 million lines of time-sensitive code.

The folks at First Chicago Corp. plan to select a date change services partner or partners in the second quarter to help the company address the problem, said Dwight J. Hearns, a systems officer at the bank holding company in Chicago.

Still, Hearns and other IS managers say they resent how some vendors are downright smug about holding the upper hand with sorely needed programming resources and project expertise.

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Netscape freshens up

Firm slashes prices, offers tools for 'net management

By Kim S. Nash
SAN FRANCISCO

The press to win IS hearts was more full than full court.

Sharp price cuts, new World Wide Web servers and the promise of special intranet management tools had Netscape Communications Corp. product users oohing and ahhing at the vendor's first user conference last week.

More than 3,000 webmasters and information systems professionals attended the three-day show, and an undetermined number of Netscapians were turned away for lack of space, company officials said.

"They're doing everything right. They're still one step ahead of the rest" of the Internet pack, said Tamas Doszkocs, a computer scientist at the National Library of Medicine in Bethesda, Md.

Netscape previewed a tool kit that lets IS managers customize its Navigator browser. New buttons, help files and links to users' internal applications can be built to replace Navigator's buttons.

And Netscape cut the price of its Web servers, in part to better compete with Microsoft Corp.'s new — and free — Internet Information Server (IIS). Netscape's lower prices came as part of SuiteSpot, a new six-product set (see chart). Users can save more than $200 over Netscape's old pricing scheme.

Unlike IIS, Netscape's Web products run on several operating systems, and the company offers more development tools and customer-support options than Microsoft.

Netscape will no longer charge Unix users more than Windows NT users for similar Web servers.

Netscape rollout

Users can buy the six-piece SuiteSpot bundle for a discounted price of $2,895. FastTrack is a low-end Web server for novices.

Enterprise Server 2.0	Replaces Commerce Server	$995
Catalog Server	Index and search engine	$995
Proxy Server 2.0	Upgrade to Proxy Server 1.0	$995
Mail Server 1.1	Upgrade to Mail Server 1.0	$995
News Server 1.2	Upgrade to News Server 1.0	$995
LiveWire Pro	Web development kit	$695
FastTrack Server	Replaces Communications Server	$295

Intranet help

Meanwhile, users who are building internal, or intranet, applications on the Web can expect to see a string of new utilities this year. Netscape plans to ship a Web management product code-named Enterprise Configuration Kit by June. It is part of its LiveWire application development kit.

The product would track Web site content and control user access privileges to Web servers throughout a company.

Separately, a tool set that lets IS managers change buttons and menus on the Navigator browser intrigued many users at the show.

"You could have a button directly to your company's own help desk, rather than pressing 'help' and getting generic advice from Netscape's Web pages," said Roger Barnette, a software engineer at Information America in Atlanta. Information America is a unit of legal publisher West Publishing Co.

Rival browsers, such as those from Microsoft and Oracle Corp., can't be customized by users. The kit is being beta-tested and is due to ship by June. It will be part of the next major release of Navigator, code-named Atlas.

Edify introduces software to integrate phones and Web sites. See page 70.

Open Market aids Web site upkeep

By Kim S. Nash

Web server maker Open Market, Inc. last week announced a $35,000 product designed to tackle the growing problem of World Wide Web site management.

If it ships in April as promised, OM-Axcess will beat Netscape Communications Corp. to the punch in addressing this decidedly unglamorous side to using the Web for business.

'net server management

The care and feeding of multiple Web servers "is a stretch for the management tools we get today," said John Parkinson, director of emerging technologies research at Ernst & Young. He was referring to the utilities built in to Web servers from Microsoft Corp., Netscape and others.

Out of control

Information systems managers are in a tough spot. Internal Web, or intranet, applications are relatively easy to create. That means end-user departments can build their own, often without an official OK from IS. Yet IS is increasingly expected to manage the software and hardware involved as well as troubleshoot problems.

Tasks such as forming uniform security policies or controlling user access rights to far-flung intranets would be easier done from a single server, Parkinson said. His Los Calinas, Texas, office alone uses four to 10 intranet servers.

The problem is compounded for companies with even more Web servers, such as Lockheed Martin with nearly 200 and Sun Microsystems, Inc. with more than 1,400.

Netscape, the leader in commercial Web servers, plans to ship a Web management product code-named Enterprise Configuration Kit by June (see story at left).

But Open Market expects to beat Netscape out of the chute. In broad strokes, OM-Axcess tracks Web server content, grants and revokes end-user access and audits use of intranet applications. The product can also manage Web servers from vendors other than Open Market, said Bob Weinberger, director of marketing at Open Market in Cambridge, Mass.

OM-Axcess is in beta testing and is due to ship next month.

Conde Nast and Digital Equipment Corp. plan to use OM-Axcess, according to Weinberger. Neither company could be reached for comment.

Open Market also announced OM-Transact, a package designed to handle the back-office processing behind electronic commerce applications. Pricing starts at $250,000, and it is also due to ship next month.

Do intranets doom client/server? See page 126.

Sun cleans up Java security spill

By Gary H. Anthes

New cracks that appeared last week in the security of Sun Microsystems, Inc.'s Java programming language underscored the fact that nothing in networked life is perfect — not even something as highly acclaimed as Java.

Although the flaws should be fixed before too much damage is done, the Computer Emergency Response Team (CERT) at Carnegie Mellon University sent an alert over the Internet warning that Java applets can be made to disguise themselves in a way that enables them to go places they aren't supposed to go.

"Java applets can connect to arbitrary hosts on the Internet, including those presumed to be previously inaccessible, such as hosts behind a firewall," the CERT said.

"This is certainly a bug and not a nice thing, but I doubt it will cause much trouble," said David Chess, a security expert at IBM's Thomas J. Watson Research Center. He said exploiting the bug would take some care and skill.

Netscape Communications Corp. has a patch available now for its Navigator browser, and Sun said it will have a fix for its Hot Java browser posted to its World Wide Web site later this week.

Security experts said users will always face risks on the Internet, no matter how vendors patch their software products. "What we're dealing with here is a fundamental vulnerability; it's not unique to Java," said William H. Murray, information security consultant for Deloitte & Touche. "It's a vulnerability that has to do with running a network composed of untrusted systems."

Read all about it!

The security alert on Java can be found on the Internet at ftp://info.cert.org/pub/cert_advisories/CA-96.05.README. Information about the flaw in Netscape Navigator 2.0 and a patch for it can be found at http://home.netscape.com/newsref/ref/java_security.html. A software patch to Sun's Java Developer's Kit will be posted later this week to http://java.sun.com. Click on "What's New."

Sun has won praise for the soundness of its Java language, which was derived from C++. But recent flaws found in Java implementations bear out warnings that Java shouldn't be considered 100% reliable [CW, Feb. 19].

"The only shortcoming with Java security is it doesn't live up to its hype," said Alexander Newman, executive director of the Sun User Group in Boston. "In terms of security, Java is just as good as everything else, which means it's just as bad as everything else."

The latest vulnerability exists in the Java Applet Security Manager used in Netscape's Navigator 2.0 Java implementation and in Release 1.0 of the Java Developer's Kit from Sun.

For security reasons, Java was designed so a Java program, or "applet," can't access any computer other than the server that produced it and sent it to the client. However, due to long-standing weaknesses in the Domain Name Service used by TCP/IP and because of the Java flaws publicized last week, it is possible to produce a malicious applet that contains the IP address of a machine to be attacked rather than the correct home address of the server that launched it.

How and when to use Java. See page 48.

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The CY-9000 half-inch digital DTF drive is a breakthrough in performance that slashes backup and restore time while providing unsurpassed reliability and data integrity.

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* *Sentry Market Research*

** *All drives, except VHS, are available with data compression*

The cost of system time varies from site to site, but a recent study has put the cost of a medium sized PC LAN at ***$18,000 per hour*** — and the cost of a UNIX network at ***$30,000 per hour.**** Numbers like that make it easy to understand how a backup/restore solution that can do its job faster can save you serious money.

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All eyes are on Novell

BrainShare audience wants to know if firm has a strategy

By Laura DiDio and Tim Ouellette

Users attending next week's BrainShare conference in Salt Lake City will be checking to see if Novell, Inc. has come up with a coherent technology strategy that can stem the tide of defectors to Microsoft Corp.

What a difference a year makes. Last year's BrainShare conference was all about AppWare and conquering the desktop with the WordPerfect suite.

But both of those initiatives are gone. Novell sold WordPerfect in January and, just last week, spun off the AppWare Group as a private firm called Network Multimedia.

This year's BrainShare will focus on technology issues, such as the availability of NetWare Directory Services (NDS) on other platforms; Green River, the next major release of NetWare; and GroupWise XTD, Novell's next major upgrade to the GroupWise messaging platform.

Users, analysts and independent software developers are all waiting to see if Novell is truly back on track with a cohesive strategy for competing against Microsoft's Windows NT Server.

"Novell is at the crossroads. After so many failed initiatives, they've run out of chances, and Windows NT Server is hard on their heels," said Mark Herder, manager of data communications at Dartmouth Hitchcock Medical Center in Lebanon, N.H.

On deck

Novell plans to deliver details and dates for the following NetWare features at BrainShare next week

- NDS on Windows NT Server
- GroupWise XTD, the next major upgrade of the messaging platform
- NDS on other platforms, including the UnixWare offerings now being sold by Hewlett-Packard and SCO
- Net2000 Component infrastructure, a series of components that enable software developers to extend NetWare APIs
- Native TCP/IP on NetWare
- Green River, the next major release of NetWare

Herder said he applauded Novell's decisions to rid the company of "distractions and excess baggage." But still, Herder said he isn't sure Novell knows what it is doing or how it will maintain the large base of application developer support.

Neil MacDonald, a senior research analyst at Gartner Group, Inc. in Stamford, Conn., said such user sentiments are the norm these days. "I expect to see 15% to 20% of the NetWare 3.x installed base defect to Windows NT Server," MacDonald said.

Like much of the industry, MacDonald and Eric Hindin, a program manager at The Yankee Group, a Boston consultancy, are taking a wait-and-see but let's-not-wait-too-long attitude.

"They have to deliver NDS on other platforms — especially Windows NT Server," Hindin said. "There's no way NT Server is going away, so Novell's best strategy is to keep users happy by working with NT Server."

Competing edge

However, there is at least one bright spot: GroupWise XTD.

Though GroupWise XTD's ship date has slid back to midyear, observers said its planned workflow component will help give it an edge over competing products such as Lotus Development Corp.'s Notes and Microsoft's Exchange Server. Novell is working with workflow market leader FileNet Corp. in Costa Mesa, Calif., to develop the GroupWise Workflow component.

By adding workflow, Novell will let users automate and manage business processes from within GroupWise XTD desktops. Notes and Exchange require users to buy and integrate add-on products from third-party developers.

Third-party Windows NT Server utilities lag behind NetWare counterparts. See page 70.

OpenView, Spectrum gain enhanced tracking

By Patrick Dryden

Network management

More help for overworked and understaffed network management groups arrived last week from Cabletron Systems, Inc. and Hewlett-Packard Co.

Both vendors came through with promised enhancements to their network management software platforms, which will help users track more of the diverse elements on their distributed client/server networks.

Administrators who rely on Cabletron's Spectrum line will be able to reduce operators' chores through a new filtering option and support for NerveCenter Pro, an event-correlation tool from Seagate Enterprise Management Software, Inc. in Cupertino, Calif.

More flexibility is also on the way, starting next quarter, for central administrators running the market-leading OpenView Network Node Manager and associated systems and performance management options from HP. New agent software and integration efforts will allow remote monitoring of workgroups that run Microsoft Corp.'s Windows NT or Novell, Inc.'s NetWare.

Later this year, users will be able to run the HP tools on Windows NT, which many administrators consider a cheaper and simpler server than Unix.

Users welcome expanded capabilities for their familiar network management platforms.

"We need to monitor our routers, hubs and servers for events that are potentially hazardous to our network's health, without requiring a full-time operator to watch the management console," said Rick Armstrong, network and communications manager at Motorola, Inc. manufacturing groups in Austin, Texas.

Armstrong said he has used Spectrum since 1991 to manage a network that now spans 10,000 nodes at multiple sites.

"NerveCenter will provide benefits we currently don't have within Spectrum," he said. "We're looking for something to examine events and report to us what causes the alarms."

Spectrum users with very large networks will gain much easier tools to process and coordinate events, including a library of filtering functions to cut down training time and speed up their implementation, said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

Cabletron and Seagate EMS expect to integrate Spectrum and NerveCenter Pro in three to six months.

$10,000 option

Spectrum Version 4.0, promised by the end of the month, will offer the Alarm Notification Manager for $10,000. It lets users define rules for sending alarms across a network to one central Spectrum scheduler or an application such as NerveCenter Pro.

By porting OpenView agent software for Unix systems and networks to monitor NetWare and Windows NT environments, HP is making "a solid move to spread out OpenView's client coverage," said Brian Burba, a management analyst at International Data Corp. in Framingham, Mass.

HP users at Charles Schwab & Co. in San Francisco said they like the new connectivity modules that let HP's performance monitoring tools track LANs.

HP's enhancements will help designers complete a network management project under way at Schwab, said Ron Wolf, senior technical lead of the network performance and capacity-planning group. The group wants to track the end-to-end performance of distributed client/server applications and their impact on systems and network segments.

Oracle develops OLAP

New graphical environment uses Express multidimensional DBMS

By Dan Richman

Oracle Corp. today is expected to announce a graphical development environment for creating complex on-line analytical processing (OLAP) applications that extract data from Oracle's Express multidimensional database management system.

Howard Dresdner, an analyst at Gartner Group, Inc. in Stamford, Conn., said Oracle Express Objects 2.0 is "among the most powerful tool kits available" for the competitive multidimensional DBMS marketplace. Two beta users praised it.

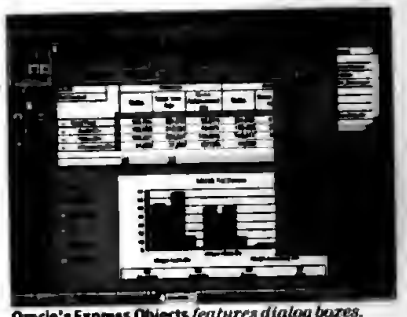
The $3,995 package enhances the capabilities of Express Analyzer 1.0, a year-old product on which it is built.

Express Analyzer can build so-called executive information systems, which are highly simplified applications for data visualization that have minimal opportunities for ad hoc analysis. Express Objects goes beyond that, creating applications for more advanced users.

Express Objects features dialog boxes, radio buttons, forms, pull-down lists and multiple windows that might contain text and graphs that stay synchronized with each other when either changes. But Express Analyzer, which costs $595, must be on each machine where Express Objects applications are deployed.

Express Objects, set to ship by the end of this month, is object-oriented so that, for example, one report can be created from many pieces. Then a dozen variants of the report can be created — such as daily, weekly and monthly views — with changes made only to the relevant pieces.

"This is such a vast improvement over what was available for Express development before," said Dan Bolos, president of Symmetry Corp., a consultancy in San Rafael, Calif. The new development tool "already understands data analysis and retrieval, so you don't have to program a lot of things you used to."



Oracle's Express Objects *features dialog boxes, radio buttons, forms and pull-down lists*

Paul Mundell, a decision-support specialist at Warner Bros. in Burbank, Calif., agreed. "It is a product rich in useful objects, though it uses a lot of system resources. You need a Pentium on the development machine," he said.

Oracle readies Webserver 3.0 before it ships 2.0. See page 70.

Hitachi to hit notebook scene

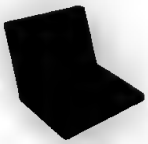
Japanese electronics giant to enter market this spring with Pentium line

By Mindy Blodgett

Consumer electronics giant Hitachi Ltd. is edging closer to its promise to enter the corporate notebook computer market, officials at the newly formed Hitachi PC Corp. said last week. Last fall, Hitachi said it would expand into laptop computers sometime this year.

In a briefing last week, Mark Yahiro, vice president of marketing and business development at Hitachi PC Corp. in San Jose, Calif., said the company will target the corporate user with a line of midrange and premium multimedia, Pentium-based notebooks to be introduced this spring. Pricing details weren't disclosed.

Yahiro also declined to disclose many details about the two lines. But he said the laptops will be "communications-centric" and will have features such as integrated 28.8K bit/sec. modems.



Notebook shipments

Among the Top 10 notebook vendors, a combined total of 3.6 million units were shipped last year — an increase of only 12% over 1994 shipments.

Yahiro said once Hitachi enters the notebook arena, the company will investigate other areas, such as the desktop market.

The move is a dicey one for the Japan-based company; it is strong in the areas of mainframes and electronics but has never ventured into the turbulent laptop or desktop markets, analysts said.

The slowdown

The overall notebook market softened in the last quarter of last year. Industry observers said they expect growth in the low-end notebook arena, but they are concerned that sales of premium notebooks are slowing down.

"[Hitachi is] doing this because with all the convergence occurring between different technologies — and the fact that digital is taking over analog — they and other Japanese companies are afraid that the power may shift away from electronics to the computer makers," said Kimball Brown, an analyst at Dataquest, Inc. in San Jose. "But it is going to be very, very tough. Why would a corporate user buy from Hitachi, which is not an established name in the notebook market?"

Hitachi isn't the only Japanese electronics company to take a stab at the notebook market. Fujitsu Ltd. is expected to introduce notebooks, and Sony Corp. has said it will enter the market this year. Toshiba Corp., which has cornered the U.S. laptop market through its subsidiary, Toshiba America, Inc., has said it will enter the desktop domain.

"Hitachi is part of a larger trend on the part of Japanese companies [that] think that because they have done business in screens and semiconductors and hard drives, they can tackle this new market," said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass.

"Hitachi is smart to concentrate on the professional market, because the low-end, retail end of notebooks is much riskier financially," Stephen said. "But there is going to be a long learning curve, and the competition is very tough and getting tougher. So we'll have to see how it all shakes out. Some of these Asian companies may not make it."

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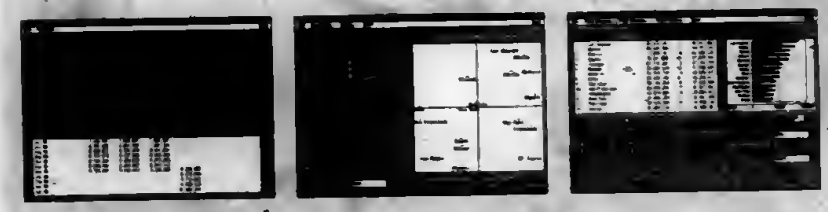

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1981

PC price cuts

CONTINUED FROM PAGE 1

pected to push sales of more powerful desktop systems.

Adam Schoenfeld, an analyst at New York-based Jupiter Communications, characterized the price cuts as "more of a spasm in the general cycle of prices coming down, not an overall price war." The cuts won't drive corporate buyers to the checkout lines, he added.

"Users aren't going to have emergency budget meetings to deal with these cuts," Schoenfeld said. "Buyers have a schedule, and they pretty much stick to it."

Goldoff and other users agreed.

"The lower prices will allow me to buy more, but I won't buy now just because of the price," Goldoff said. "The way the cycles go now, prices keep coming down and performance goes up. You could wait forever and keep getting a better price."

Bill Kriner, a network coordinator at US West Communications, Inc., said recent budget cuts in his department make the new pricing attractive but won't change his buying cycle.

Kriner said cuts will keep prices competitive for when he does get out his shopping cart.

"Some cuts mean if you buy four systems, you just bought a free one," he said. "That means more systems for the same money, and that's material."

Chad Pearce, vice president of systems at Godwins Booke & Dickenson, an employee benefits consultiog firm in Conshohocken, Pa., agreed with Kriner's sentiments.

"If this came at the beginning of a budgeting cycle, we might be able to upgrade more than we would have planned," he explained. "We normally have a pretty set budgeting plan put together."

Anyone can play

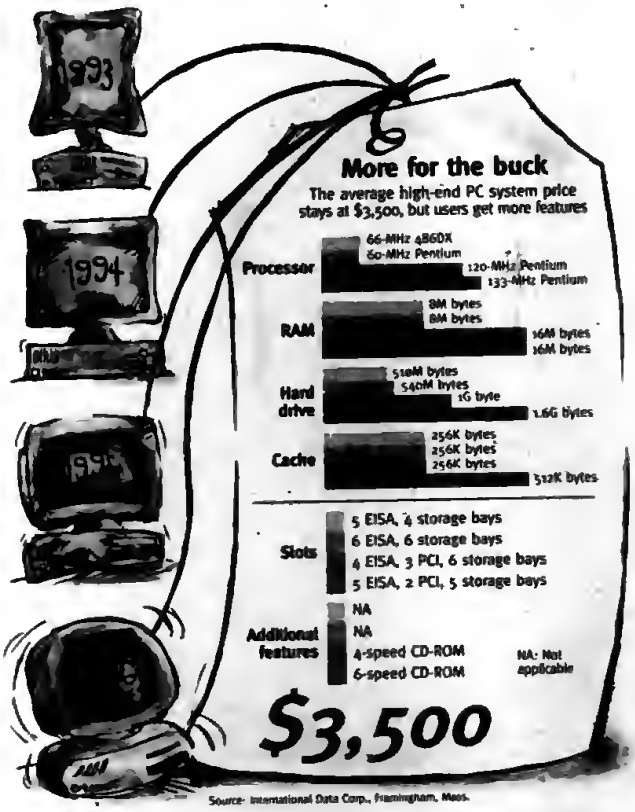
IBM, Digital and Compaq jumped into the price-cutting game last week with reductions of up to 27%. Dell, AST Research and HP chose to sit on the sidelines.

Others joined in

Compaq took the lead last week by setting off the cuts. But besides Compaq, the price-cutters vying for the atteotioo of these users include IBM, which began cutting prices across its lines two weeks ago, and Digital, which was quick to follow Compaq's lead.

IBM sooo bounced back with further cuts oo its commercial PCs to balance the market.

Hewlett-Packard Co., Dell Computer Co. and AST Research, Inc. all boasted that their current prices were competitive enough to not require any corresponding cuts. Dell played it more coyly than the others and said it planned oo "immediate" cuts.



Source: International Data Corp., Framingham, Mass.

Compaq losing market share

CONTINUED FROM PAGE 1

see no major changes in their business relationship with the Houston vendor.

"We are not thinking of straying from Compaq at this point. We still continue to get great support from them," said Glen Sandusky, chief information officer at Chicago-based Aon Speciality Group, a former member of Compaq's major accounts council.

That kind of customer reaction should be the good news for Compaq, whicb seems to be under attack from many quarters.

Sign of the times

The latest round of bad news for the company came in the form of lower-than-expected sales in the current quarter that are threatening to push revenoe and profitability down through the second quarter [CW, March 4].

This, in turn, triggered internal efforts to reduce costs and cut prices, which reverberated across the PC industry last week (see related story above).

Most of Compaq's immediate problems stem from a slowdown in corporate sales — its core market — and newly resurgent rivals such as IBM and Hewlett-Packard Co., some analysts said.

Indeed, Compaq blamed intensifying competition across all sectors of its business and a softness in corporate demand during the first quarter of this year for its slumping sales.

Analysts say longer-than-usual evaluation cycles at major corporations that are weighiog the relative merits of a Windows 95 or Windows NT migratioo are responsible for an industrywide slowdown. For Compaq, which unlike its competitors has traditionally carried inventories in excess of $2 billioo, a slowdown such as this could really hurt, analysts said.

"Compaq has set some pretty aggressive goals for itself, and they have fallen short of these goals," said Bill Ablondi, an analyst at Giga Information Group in Norwell, Mass.

Some potentially more serious chinks are beginning to show in the company's armor. They include the following:

- Badly depressed portables sales, which now account for less than 17% of revenue, down from a lofty 35% in the early 1990s. Last year, Compaq ranked third, lagging far behind market leader Toshiba America Information Systems, Inc. in the U.S. market. Its market share dwindled from 12.3% in 1994 to 10.8% last year. The problems are said to be out-of-date technology, technical difficulties and an overall softness io the market.

The company's lagging portables sales may have also dragged down overall growth admitted Bob Stearns, senior vice president of technology and corporate development.

> Compaq's "service is outstanding, and architecturally speaking, they are staying with most of the changes. But price is a big issue with Compaq."
>
> *— Sean Gilbert, MIS manager, CardService International*

"I think we had some [notebook] product deficits and some products that were not properly priced. But I think we are well on our way back to gaining market share this year," Stearns said.

- Slowing growth in server sales, the cash engine of the $14.8 billion corporation. This sales growth dropped from 39% in the third quarter of 1995 to 33% in the peak fourth quarter, according to International Data Corp. in Framingham, Mass. Rivals IBM and HP, meanwhile, picked up market share for the quarter. Unsold inventory from the third quarter forced Compaq to cut shipments in the fourth, analysts said.

The company also downplayed concerns about a possible slowing in its server sales. "We have huge market share in the server busiioess. The rate of change of our growth can be expected to change somewhat" every now and then, Stearns said.

- Tremendous pricing and channel pressure, particularly from an aggressive and fast-rising HP, a threat acknowledged by Compaq CEO Eckhard Pfeiffer.

Compaq grew 18% in overall PC sales in 1995, but HP — which started from a smaller base — grew by 127%, according to Dataquest, Inc. A complete product-line overhaul in the first half of 1995 is partly to blame for Compaq's performance last year.

And Compaq is no longer perceived as the price leader. Although Compaq slashed prices by up to 21% across its PC lines last week, some competitors — ootably HP — didn't respond, claiming that their prices are already on par with Compaq's new prices.

Still bullish

Yet analysts remain bullish on Compaq, especially on its server business. "Compaq could lose a few points of market share" this year becuase of intensifying competition, conceded Susan Frankle, an analyst at IDC. "But it is extremely unlikely that anybody is about to unseat Compaq this year" from its top spot in the PC server business, she said.

A new line of highly modular, technologically advanced notebooks slated for June delivery is expected to jolt Compaq's sagging notebook business. Analysts briefed on the line claim that its small form factor, screen size and highly integrated design will earn Compaq some market share in the later part of the year. "Compaq has had to ride their brand instead of their product line for some time now. The oew products will put them right back into the middle of things," Ablondi said.

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Digital broadens arsenal in workstation wars

By Michael Goldberg

Digital Equipment Corp. today will release entry-level and midrange workstations aimed at market leaders Sun Microsystems, Inc., Silicon Graphics, Inc. and Hewlett-Packard Co.

The entry-level AlphaStation 255, with a starting price of $8,495, and the AlphaStation 500, which has a top processor clock speed of 333 MHz, fill gaps in the company's product line. The workstations give users more flexibility and a clearer upgrade path.

To stave off competitors in the ongoing chip speed wars, Digital plans to offer a $35,000 AlphaStation 500 with a 400-MHz processor in June.

Peter Lowber, an analyst at Datapro Information Services Group in Lexington, Mass., said Digital's announcement answers a criticism that the company's workstation team lacked the tenacity needed to compete against market rivals.

"They've taken what was formerly midrange performance and put it down at the low-end pricing. This really puts the squeeze on people like Sun, HP and SGI," Lowber said.

Digital workstation users said they liked what they saw.

"We thought they were very price competitive," said Bob Irwin, MIS director at Moog, Inc., an aerospace manufacturer in East Aurora, N.Y.

Moog, which has about 100 workstations in its mechanical design shop, including models from HP and Sun, has some older AlphaStation 200s and is buying some of the 500 models.

Put it in 3-D

Digital today is offering its hardware-based PowerStorm graphics product family for three-dimensional mechanical design and other applications.

Upgrade abilities

Irwin said Digital provided good hardware performance with the flexibility to upgrade later. Irwin said he likes that Digital offers Microsoft Corp.'s Windows NT on its workstations because his firm may use some NT-based applications along with its Unix systems. And Digital Unix is 64-bit now, so he won't have to upgrade later.

With its new workstation models, Digital is providing the flexibility of choice that users require, said Todd Pistorese, vice president of business development at Tellus, Inc. in Bellevue, Wash. Tellus markets geographic information systems for utility companies. "For smaller companies, Digital is the best equipment for the price they can afford. With such performance, they don't need to worry about hardware upgrades," Pistorese said.

Digital has also ended some user headaches by enabling them to insert new daughter cards or systems boards to boost the performance of the 255 models, said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

Alpha entry

AlphaStation 255

Processor: 233-MHz and 300-MHz Alpha 21064A

Operating systems: Digital Unix, Windows NT, OpenVMS

Price*: $8,495 and $12,095

AlphaStation 500

Processor: 266-MHz, 333-MHz and 400-MHz Alpha 21164 and 21164A

Operating systems: Digital Unix, Windows NT, OpenVMS

Pricing: from $20,800 to $35,000

* List price

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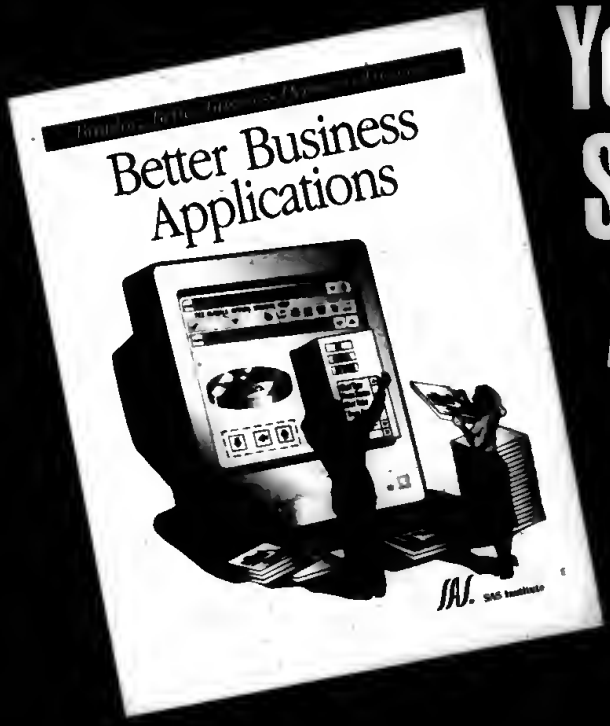

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Bay battles 3Com for remote access crown

By Bob Wallace

With a slew of new products, Bay Networks, Inc. is challenging 3Com Corp. for dominance in the race to offer one-stop shopping for remote access products.

Bay last week announced enhancements to the remote access portfolio of its Xylogics, Inc. unit, Integrated Services Digital Network (ISDN) support for its routers and a deal to resell other wares in moves that will let it cover everything from the central office out to single-user sites.

"Their product plans map perfectly with how we want to roll out remote access, which is to offer it far away from headquarters," said Charlie Araujo, manager of enterprise technical services at Friendly Hill Healthcare Network in La Habre, Calif. "We're looking at extending access to clinics, salespeople and homes."

Analysts said Bay has come a long way in the remote access area.

"They've come from having nothing a year ago to the forefront of the remote access race with 3Com," said John Morency, a principal at The Registry, Inc., a Stratham, N.H., consultancy. "Bay's offering both stand-alone products and integrated ones, which is flexibility users want."

At the high end, Bay offers a $12,000 module that supports four T1 or ISDN Primary Rate Interface (PRI) connections and a second, $7,500 unit that supports eight synchronous links for its 13-slot Backbone Node router.

Bay also unveiled a $2,000 module that supports four ISDN Basic Rate Interface (BRI) connections for its four-port Access Stack Node router, which can be stacked four high.

Fishing for new products

The vendor announced a $7,295 PRI for the Marlin branch office remote access system that can be enhanced and expanded using several different add-in cards.

At the low end, Bay announced a voice card that enables the Xylogics Clam small-office product to use one of the two BRI lines for voice or fax traffic. An integrated network termination allows the linkage without an external device.

The Clam has one Ethernet port and one BRI port. The Clam with the voice card costs $1,395, and the Clam with the built-in network termination costs $1,195.

Both the Bay and the Xylogics equipment support multilink point-to-point protocol, which lets users combine both BRI B channels to form a 128K bit/sec. wide-area network link.

Through an alliance with Eicon Technology, Inc., Bay will resell the vendor's WAN services for Windows NT software and Eicon's server- and client-based ISDN BRI cards. The latter addresses the single-user market.

Some Bay products now support what the vendor calls Demand Circuit Groups. With these, information systems managers can, for example, set aside five remote access server ports for five priority users while letting 20 others contend for five additional ports.

Araujo said some of the products' reliance on ISDN BRI isn't a drawback because the firm is in California where the service is generally available. ISDN isn't as easy to get in other parts of the country, however.

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Commercial IS policies pitched as federal fix

By Gary H. Anthes

"Why can't a woman be more like a man?" asked Henry Higgins in the musical *My Fair Lady*. On Capitol Hill recently the refrain was, "Why can't government be more like the private sector?"

Witnesses took turns telling a congressional committee what is wrong with informatioo systems management in government. They said "best practices" borrowed from the private sector — such as business process re-engineering, benchmarking and return-on-investment analysis — might help the government get more bang for its IS bucks — which total $25 billion annually.

"Traditional government represents the ultimate in centralized, bureaucratic control," said Peter W. Huber, a senior fellow at the Manhattan Institute for Policy Research in New York, who testified before the committee.

Huber said the government should outsource much of its IS work and decentralize the rest. He also recommended firing middle managers, who largely exist to pass information above and below. "Informational midwives aren't needed any more," he said. "E-mail . . . Lotus Notes and wide-area oetworks do the conveying much better."

Renato A. Di Pentima, former chief information officer at the Social Security Administration, said government must shift its focus to the benefits that systems bring. In many agencies, the success of a project to install 40,000 PCs would be defined by whether the agency installed the systems ou time and within budget, he said.

"But what outcomes are you getting from that investment?" be asked. "Are people waiting 15 minutes instead of an hour when they come in to a local office? Can you answer their questions correctly 98% of the time?"

Indeed, the White House Office of Management and Budget recently announced that it will start requiring agencies to state program goals in their annual budget requests. Beginning in 2000, agencies must also report actual performance compared with goals.

But Paul A. Strassmann, who has held senior IS posts in government and industry, said the move to performance-based budgeting and program management is no silver bullet.

"This will just create more bureaucracy," be said. "They'll have more forms to fill out to justify things. Those guys know how to tweak the numbers anyway."

Public vs. private

A recent study compares the IS management practices of leading corporations with those of federal government

CORPORATIONS	FEDERAL AGENCIES
Conduct benchmarks against standards	Fail to benchmark performance
Hold IS managers accountable	Fail to hold IS managers accountable because of turnover
Examine existing processes before applying IS technology	Buy IS technology before evaluating existing business processes
Direct scarce IS resources toward high payoff areas	Lack accountability and discipline for IS investments
Apply rigorous cost and performance measures	Fail to monitor the results of systems investments
Maintain modern IS management skills	Perpetuate outmoded skills with poor training and hiring practices

Source: U.S. General Accounting Office, Washington

Some role model!

The federal government may not want to learn all its lessons from the private sector, where fewer than one in six systems development projects can be called a success.

In a recent survey of information systems managers at 365 Fortune 1,000 companies, The Standish Group International, Inc. in Dennis, Mass., found these results in 8,380 projects:

- Sixteen percent were completed on time, within budget and with all the features originally planned.
- Fifty-three percent were completed late, over budget and with limited functionality.
- Thirty-one percent were canceled before completion.

"These statistics serve as a stark reminder that information systems projects carry high risks of failure if not carefully managed and controlled," noted Christopher Hoenig, a director in the Accounting and Information Management Division of the U.S. General Accounting Office.

— Gary H. Anthes

Managed care undergoes networking transfusion

By Thomas Hoffman
ATLANTA

Forget about Hillary Clinton's fading vision of formal health care reform — this industry is healing itself with a high-tech Band-Aid.

The boom in managed-care services, coupled with the merger and acquisition frenzy, is leading IS organizations to develop integrated delivery systems (IDS). Community Health Information Networks (CHIN) and data warehouses. These technologies are used to streamline the transmission of patient and clinical data between facilities.

David G. Selman *of the Toledo Hospital supports the new ATM network*

They were the hot topics at last week's HIMSS '96 conference sponsored by the Healthcare Information and Management Systems Society.

Increased competition for "covered lives," as insured patients are referred to in industry slang, is leading hospitals to position themselves electronically between primary care physicians and insurance companies and other industry players. That's one of the main reasons ProMedica Health Systems, Inc. began rolling out a $3 million Asynchronous Transfer Mode (ATM) network from Bay Networks, Inc. last month.

The network is expected to help the Toledo Hospital, a ProMedica unit, integrate voice, data and imaging traffic over its clinical workstations, according to David G. Selman, vice president of informatioo services at the Ohio hospital.

In conjunction with the ATM network, ProMedica has flipped the switch on a repository that stores more than 700,000 patient records. The system, from 3M Healthcare Information Systems in Salt Lake City, is expected to give 2,200 physicians, nurses and other hospital staffers access to patient data as it is phased in over the next several months.

Physician integration

Intermountain Health Care (IHC), a $1.4 billion company that manages 24 hospitals, has also wrestled with the managed-care juggernaut. "We tap-danced over whether we would integrate our physicians" into an integrated delivery system because only 10% of the doctors the company works with are employed by IHC, said Larry D. Grandia, corporate vice presideot of IS at the Salt Lake City-based firm.

Because so many outside providers have ties to its flourishing outpatient business, IHC has built a system that links five separate physician systems. IHC is also building a 6,000-terminal longitudinal data repository with 3M. The IBM RS/6000-based system contains an elaborate view of patient histories.

The demand for networking and client/server experts in health care, like anywhere else, is a vexing issue for IS managers. "We're funneling people into new roles — like Unix and fourth-generation language development — so that they may grow with us instead of someone else," said Cynthia L. Sheets, director of clinical data management at Mount Carmel Health in Columbus, Ohio.

Remington Rand

CHIN-ing up

While Beltway bullies battle over the mamoth of a national health care information network, CHINs are popping up like crocuses.

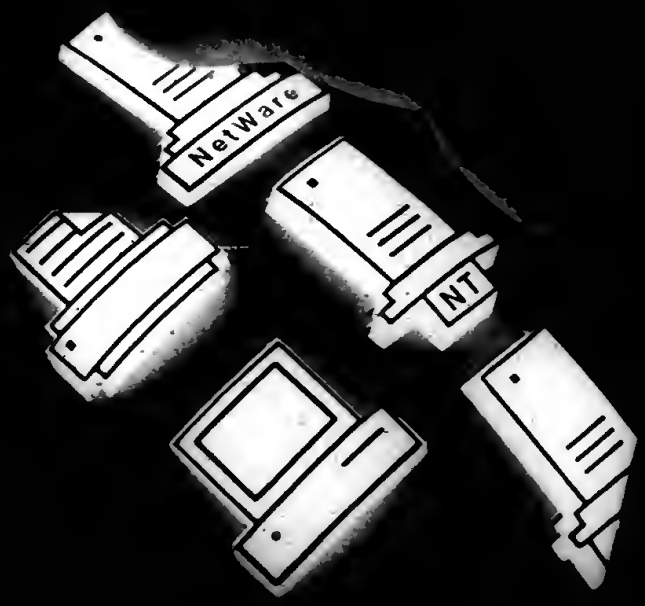
In theory, CHINs would allow metropolitan hospitals, physicians, insurers and other providers access to a giant hub of local patient data. But CHIN administrators and architects face an uphill battle.

"We've met resistance from end users to change their business flows — it's taken a lot of training and education to get people to accept this," said Jerry Tenkevich, president of Network Data Express Corp., which is building a Seattle-area CHIN.

Cincinnati has found a way to chisel its CHIN: A community-led group has outsourced development and management to IBM's Integrated Systems Solutions Corp. unit under a five-year $25 million deal.

"We thought it would work best if we shared ownership and risks with IBM," said Robert Schwartz, global infrastructure manager at Procter & Gamble Co., one of the organizations involved in the effort.

— Thomas Hoffman



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Computer Industry

Woes aside, Gerstner upbeat

By Craig Stedman

IBM thinks the Internet will be very, very good to its server business.

But financial analysts who listened to a pitch from top IBM executives last week said the computer giant still faces a tough road when it comes to growing its revenue at more than single-digit rates.

Both sides now

IBM Chairman Louis V. Gerstner showed two faces during the meeting in New York. On one hand, he waxed euphoric about the on-line future and what it could mean for IBM. But he also acknowledged the more down-to-earth problems that still vex the company.

They include weakening U.S. demand for PCs and IBM's continued poor showing in the networking hardware business.

Gerstner said it is unclear whether PC sales will rebound any time soon, and he acknowledged that IBM "is not a threat" to other networking vendors at this point.

Gary Helmig, a financial analyst at Souodview Financial Group in Stamford, Conn., said those kinds of pronouncements left him "marginally more cautious" about IBM than he was before. "There are some downsides that have been made a little more explicit," he added.

Even areas in which shipments are strong, such as mainframes and disk storage, aren't showing much revenue growth because of falling prices, Helmig noted.

"You've got a lot of businesses that are kind of stagnant in that soup," he said.

The growth of Internet-based processing should cause heavy demand for servers, and IBM's mainframe and AS/400 installed bases put it in an enviable position for pursuing corporate intranet business, analysts said. Intranets are private networks that run over protected portions of the Internet.

But IBM is playing catch-up to vendors such as Sun Microsystems, Inc. and Silicon Graphics, Inc. when it comes to selling World Wide Web servers.

"Customers don't have to junk their systems in order to take advantage of [the Internet]."

— IBM Chairman Louis V. Gerstner

"When you think Internet right now, you don't think IBM," said Clay Ryder, a consultant at Zona Research, Inc. in Redwood City, Calif.

Gerstner contended that the rise of the Internet will change the focus of computing from PCs to network servers, evoking the good old days when the market revolved around IBM rather than the likes of Microsoft Corp. and Intel Corp.

"The mythology that the PC was going to suck everything down into its model has now been categorically shown to be false," Gerstner said. "The industry is coming back our way."

IBM hopes to persuade customers to stick with their systems as they plug in to the Internet, he said.

With communication bandwidth costs dropping rapidly, "the action is in the network," agreed Thomas Loane, vice president of computers and communication services at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla.

Transmitting data from a central server to dispersed users is becoming more feasible, he said.

That plays to IBM's mainframe strengths, Loane said. "But if they were smart, I think they would have done better in the networking business. They gave that away."

Rmon heats up, sparks acquisitions

By Patrick Drydeo

Get 'em while they're hot.

In recent weeks, major internetworking vendors have gobbled up two of a handful of developers of Remote Monitoring (Rmon) hardware and software.

3Com Corp. last week acquired Axon Networks, Inc. in Newton, Mass., for $65 million. The previous week, Bay Networks, Inc. acquired Tel Aviv-based Armon Networking Ltd. for $33 million.

3Com and Bay hope to cash in on the rapidly growing market for Rmon tools, which network administrators use to diagnose network traffic and examine the end-to-end performance of key applications.

Networking trend

Spurring such interest is users' demand for more tools to monitor far-flung network segments — in particular application response and the blind spots created by switches.

Many organizations have invested in Rmon tools because their networks are so large. "The days are over when they could get by shipping a protocol analyzer around the network to check traffic," said Lou Steinberg, president of NetOps Corp., a performance management consultancy in New Fairfield, Conn.

As a result, internetworking and management vendors last year shipped $385 million worth of Rmon products worldwide, an increase from $180 million worth of products in 1994, according to International Data Corp. (IDC) in Framingham, Mass. IDC projects the vendors will ship $744 million worth of products this year, almost double last year's sales.

Remote Monitoring

Greasing the skids for both mergers, Axon Networks and Armon Networking had long partnerships with their new parent companies. But booming demand for such analysis tools prompted 3Com and Bay to move fast before these specialists got too big and too pricey, said Brian Burba an analyst at IDC.

Analysts anticipate Cisco Systems, Inc. might also seek to acquire its Rmon partner, Frontier Software Development, Inc. in Chelmsford, Mass.

"Armon and Axon wanted to be snapped up, but our most pressing issue is managing growth," said Nate Kalowski, vice president of marketing at Frontier.

"If we keep on this trajectory, we could go public soon. But who knows, maybe Cisco or one of our other partners will make us an offer we can't refuse," Kalowski said.

"Armon Networking was the smallest of these three, and Bay paid seven times its revenue," Burba said. "Since the Rmon market is hot right now, waiting would be very expensive."

Product integration

3Com didn't react to Bay's move, officials said. The company stated a preference to own core technologies instead of licensing them, officials said.

3Com plans to further integrate Axon Networks' LANServant monitoring software with its Transcend Network Management system for Unix and Windows.

Bay plans tighter integration of Armon's OnSite Manager monitoring software with its Optivity network manager and a stackable version of Armon's Rmon probe to track traffic through switches.

"This deal gives Bay a bunch of solid analysis applications for the Rmon agents embedded inside its products and a probe that managers can apply externally for more efficient monitoring," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

These vendors are trying to get beyond the "pretty picture phase" of just providing colorful graphs that show performance statistics for packets and protocols, Burba said.

These acquisitions should speed up efforts to deliver the real analysis capabilities that users crave, he said, especially for tracking the end-to-end performance of client/server applications.

For example, by offering external probe options instead of just the module embedded in its hubs, routers and switches, Bay hopes to better address managers' need for Rmon flexibility.

Cyrix takes plunge, will build PCs

By Bob Francis

Cyrix Corp. will borrow another page from Intel's playbook later this year as it begins to design and sell its own brand of PCs powered by Cyrix processors.

Cyrix's goal is to build name recognition for its Pentium-class processors, which are seemingly lost amid the continuing drumbeat of Intel Corp.'s Pentium and Pentium Pro processors. The Cyrix-branded systems are aimed at the high-performance, or "hot box," portion of the PC market — end users who want the latest, fastest PCs at prices beginning around $2,000. Similar systems in this price range include Dell Computer Corp.'s Dimension XPS line.

Desktop computers

Cyrix in Richardson, Texas, will market and sell the systems directly to customers. Later this month, it will announce an agreement with a third party to provide service and support for the systems.

Intel no longer alone

Analysts said Cyrix needs this boost for its Pentium-class processors; Intel had the market to itself until Cyrix introduced the M1 late last year.

"The end result for them is to show that their Pentium-class design is a credible processor," said Dean McCarron, an analyst at Mercury Research, Inc. in Scottsdale, Ariz.

Cyrix currently ships four Pentium-class processors, the P120+, P133+, P150+ and P166+. They are roughly comparable to Intel's Pentium processors at those speeds. The company will introduce a P200+ processor and system by the end of this year.

Lining up with Cyrix is Electronic Data Systems Corp. in Dallas, which will build the Cyrix-designed, high-end PCs.

Cyrix also will use third-party chip set and board manufacturers for its systems. Those vendors have been frozen out of the PC market by Intel's Goliath-like presence as it moved into their markets.

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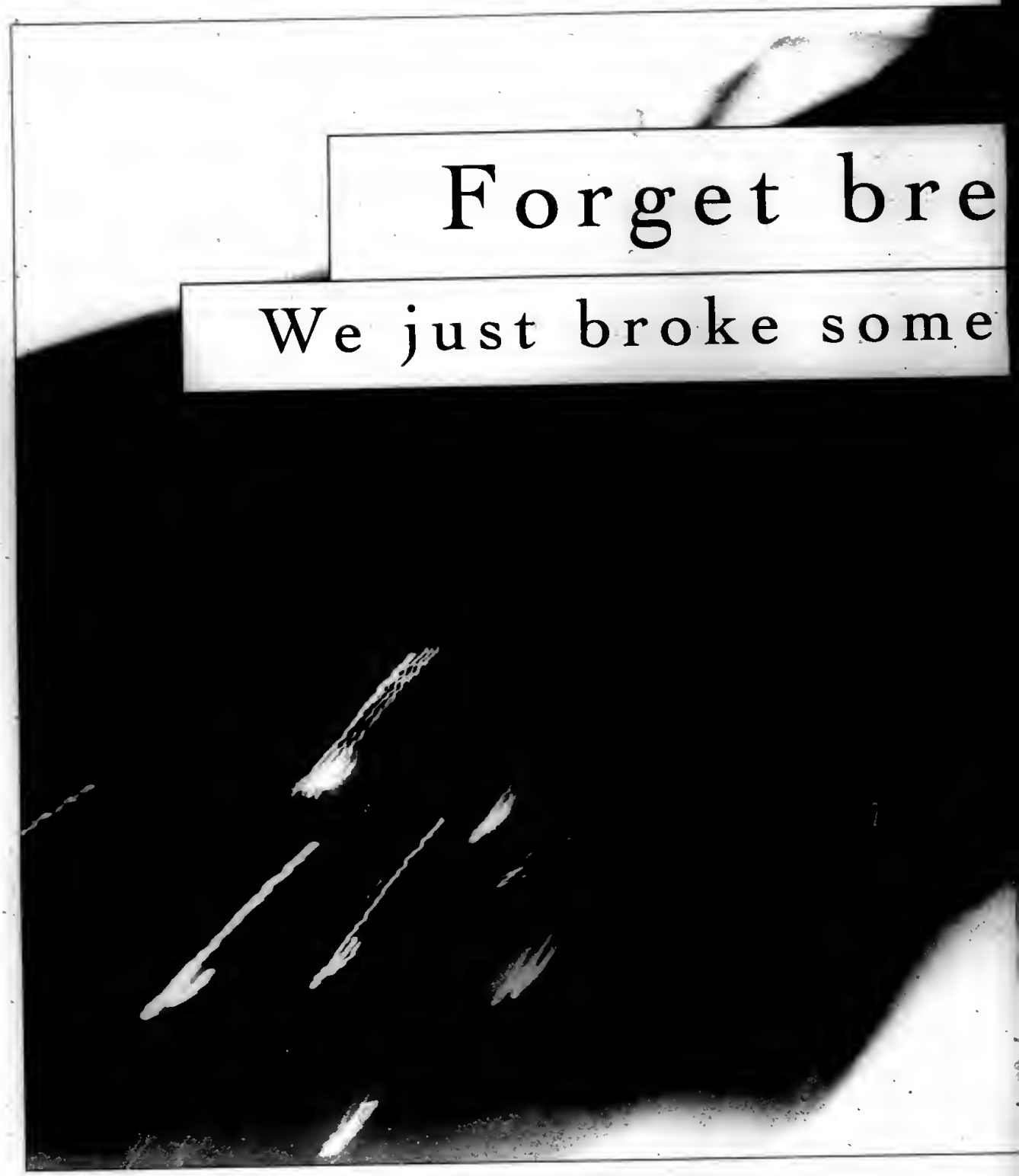

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Angst on-line

Judging by all the selling out going on lately in the commercial on-line service area, you could conclude that these networks are about as popular right now as the Ebola virus.

H&R Block has put CompuServe up for sale; Sears is getting out of Prodigy; AT&T paid $50 million for Interchange and then dumped it; Apple is killing Eworld; and Microsoft has repositioned The Microsoft Network less than six months after launching it. Web envy is prompting just about everyone to back away.

But are commercial on-line services really that much of a dead end? Hardly. What's making the service providers writhe and gyrate like victims of a manic dancing disease is the desire to run toward that totally open, universally accessible Internet as the cure for all ills.

It's reminiscent of the open computing phenomenon of the late '80s. You remember. Proprietary mainframes were going to be replaced by cheap and plentiful Unix servers. Users were going to mix and match off-the-shelf products themselves. Everything would work with everything.

Well, it's 1996 and mainframe sales are at an all-time high. The systems integration market is booming because users have found that they need lots of (expensive) help making so-called open products interoperate. Some people are even buying in big time to a vertically integrated and highly proprietary set of products marketed by a company called Microsoft.

I expect that much the same thing will happen with on-line services. Users accustomed to getting quality product support in highly structured areas such as the CompuServe forums will find that Usenet newsgroups are overwhelming, tricky to navigate and not always monitored closely by vendor support personnel. Companies that sell services on-line will discover that some users like the simplicity of going to just one place to make their flight reservations instead of having to choose from 50 sites. Subscribers may like the fact that their local Prodigy node isn't always busy and that the server delivers reasonable response time.

On-line services will continue to be a reliable resource for product support, special interest groups, virus-free downloads and *secure* electronic commerce. They'll be around for a long time. So don't get too nervous. This too shall pass.

Meanwhile, I'll be at 765357.2413@compuserve.com or paulg256@aol.com.

Paul Gillin, *Editor*
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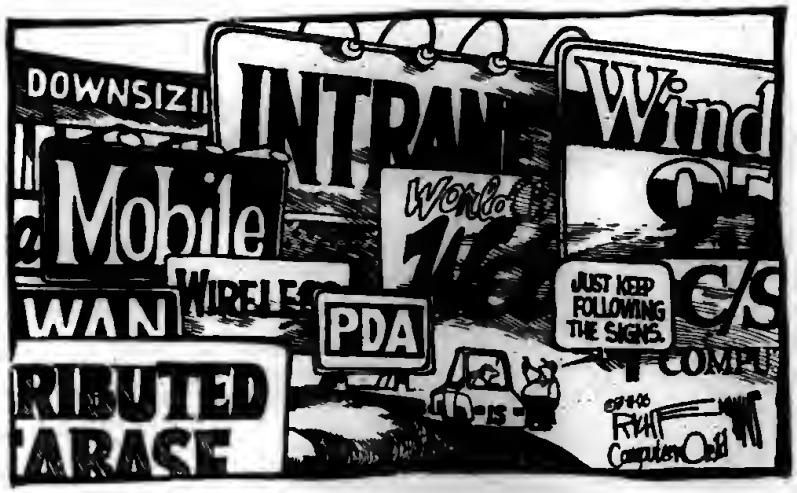


The Internet privacy debate rages on

Regarding your Soundoff feature on Internet privacy ["Internet privacy: How far should federal regulation go?" CW, Feb. 19], I really appreciated the insight shared by Marc Rotenberg. His statement, "Young kids aren't interested in dirty pictures," was very comforting.

With all the debate in the media concerning the decline of "family values," it is nice to know that an authority no less than Rotenberg is able to assure us that kids have changed so much since we were young.

His refreshing opinions certainly were in sharp contrast to Sen. Exon's archaic viewpoint that we should restrict the proliferation of pornography on the Internet to protect our children.

Hopefully, the time isn't far off when we can take down those nasty signs on adult bookstores that say you must be over 18 to enter. Thank you, Marc Rotenberg!

Greg Smith
Des Moines, Iowa

After reading the comments by Sen. Jim Exon and Marc Rotenberg, I feel compelled to address some glaring stereotypes and misconceptions.

The indecency law is a bad law because it is too openly worded. What is indecent is left to future court cases to provide precedent. This is a frightening direction, as the true power and meaning of law becomes more and more often decided by unelected judges rather than the representatives of the people.

Citizens concerned with their children being exposed to profanity and pornography aren't "religious zealots," as Rotenberg put it.

If anyone is acting rabidly, it is the freedom-of-speech zealots, who simply refuse to recognize the difference between a public forum — as the Internet is — and a private forum, such as a personal bulletin board system.

I defy Rotenberg to find an effective difference between getting a flyer for *Playboy* in the mail and seeing a header for a porno article in alt.sports.football.

The real issue is whether the Internet is a public or private forum. You can make a case that E-mail is a private matter, but not public newsgroups and World Wide Web sites.

It is an issue of public decency, no matter what the "hands-off elite" might say. This law, however, isn't a good attempt at solving the problem.

Mike Lemon
Intabex-Hail & Cotton International Co.
mdl@interpath.com

Military analogy doesn't fit remail

In "Battle against remailers an unfair fight" [CW, Feb. 12], you quoted a military figure who said that with anonymous remailers, "the old military paradigm of retaliation falls apart. The whole theory of warfare has been if someone attacks you, you can attack them. But when you are anonymous, there is no one to shoot at."

The analogy is bogus because free speech is a protected right; shooting someone isn't.

If someone says something you don't like, you have *your* right of free speech to respond. It is ironic that you would have published the article at the same time the telecommunications bill required censorship of the Internet.

Les Faby
Cupertino, Calif.
FABY_LES@tandem.com

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Verbatim

From a statement by James Black, senior vice president of engineering at Boole & Babbage, Inc. in San Jose, Calif.:

Some computer professionals view the automation of systems management as a threat to their jobs. That is a very short-sighted outlook, which only courts disaster.

The automation of routine computer operations helps to keep mission-critical systems up and running. It frees the professional staff from tedious, menial jobs. [It] lets them focus on important work that can't be automated, such as capacity planning, responding to alarms that really need expert attention and developing new service strategies.

You have a choice. You can enthusiastically embrace new automation opportunities and develop specialized skills which enhance your career. Or you can be replaced by someone who sees the longer-term business benefits and recognizes that automation is a safeguard against outsourcing and even more drastic cost-cutting measures.

From a report by Emily Green, analyst at Forrester Research, Inc. in Cambridge, Mass.:

The explosion of consumer interest in the Internet will challenge the stamina of proprietary online services such as America Online and CompuServe. As content providers establish independent presences on the World Wide Web, they will form alliances to offer consumers direct Internet connections.

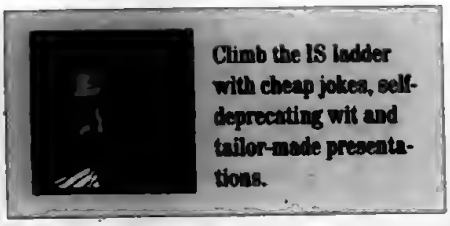
[Interviews] with 50 content providers showed a profound lack of commitment to the on-line services — and more than 70% already had their own Web sites.

All the commercial services have to offer is their existing membership and a known business model. As soon as content providers can be assured of eyeballs and revenue somewhere else, they'll ditch the proprietary networks in a second.

Noli obtundere (Never be dull)

Bill Laberis

Wherever you are on the IS management ladder, there's nothing better for your career than to improve your presentation and speaking skills. This would be easy for most people if it weren't for having to say all those words in front of a group whose collective gaze can easily burn a hole through you.



Climb the IS ladder with cheap jokes, self-deprecating wit and tailor-made presentations.

So here's a bulletproof guide for delivering winning, not whining, presentations either in front of a group of users or on stage in full view of 1,000 convention-goers.

Anyone can be funny, even you. But many people can't tell jokes well. So let visual aids get the laughs for you. I use the faux pas headlines — the obituary headlined "Ralph Steiner, a still photographer" and the *Boston Globe*'s "Man executed after long speech" — from the inside back cover of the *Columbia Journalism Review*.

These headlines are good for consistent, cheap laughs, and there is a new supply every month in the *Review*. Also, the Internet is a bottomless well of funny facts and figures about any industry or endeavor. Accompanied by your clever running commentary, these visuals will relax the audience — and you.

I use Lotus' Freelance or Microsoft's PowerPoint presentation software running on my laptop, but you can use overheads or even 35mm slides if you want to look really ancient.

Want to relate? Then self-deprecate. Nothing will make an audience feel more comfortable and receptive to your message than when you make yourself appear human, with all the attendant warts and foibles. I recently began a presentation by talking about an editorial I'd once written titled, "Commodore Amiga: The IBM PC-killer." In other words, I used my own mistakes and weaknesses to link with people in the audience and begin to converse with them.

This isn't milk we're talking about, so don't homogenize. Don't you just hate when speakers obviously are giving the same, canned talk they've given to a dozen previous audiences, with no personalization? Figure out what your specific audience members have in common, such as the fact that they all come from the same geographic area or same segment of an industry.

Maybe you can think of some nemesis they all have in common. Maybe it's their chief financial officer or the New York Yankees. A carefully chosen comment will show some solidarity between you and the crowd. When talking to IS executives I always have a remark or two about the ever-whining, ever-demanding end-user community they serve. Voila! You have an instant connection with your audience.

K.I.S.S. Keeping your message simple and singular is the most important thing to remember. And spare them your "vision" statement. Also, audiences remember extraordinarily little of what any presenter has said. Usually they remember the jokes, if they are any good. But jokes and other speaker tricks really just soften and fertilize the cranial matter to accept and retain the real message you came to deliver. If you can't boil down that message to a single sentence or two with one main thought, go back to the drawing board.

By the way, the *Columbia Journalism Review* is available at most libraries. We in the press see to it that it has an unending supply of bloopers for your use.

As editor in chief of *Computerworld*, Laberis delivered more than 100 speeches and addresses, some of them memorable. He now heads Bill Laberis Associates, a media consulting and contract publishing firm in Holliston, Mass. His Internet address is bill@laberis.com.

Intranets: The SAP-killer?

Ravi Kalakota and Andrew Whinston

It is already conventional wisdom that intranets — corporate networks with World Wide Web servers that provide a robust client/server architecture — can take the place of groupware packages such as Notes.

But that's too narrow a view of the power of intranets, which could transform the very nature of application software in the coming decade. To really understand where we want to go with corporate intranets, it makes sense to look at a very successful product in today's marketplace: SAP R/3.

The corporate world has gone crazy over SAP AG's R/3, a well-integrated client/server suite that vows to blend business processes and transform firms into lean, mean fighting machines.

If you read SAP's brochures or listen to its legion of consultants, it sounds as though users have to enter data just once, and this data moves seamlessly from the back office through the factory to the warehouse and back again.

Corporate headquarters may use R/3 for executive-level data, accounting, human resources management, central purchasing, sales planning and logistics. R/3 is used in factories for planning and control, and for local purchasing and inventory management. Sales offices can use R/3, too. SAP's Application Link Enabling technology ties these distributed applications together.

There's no arguing that R/3 is a complete and well-integrated system, but it's also extremely expensive. It costs from $5 million to $10 million to implement, which puts R/3 out of reach for all but big businesses with deep pockets. Many firms also have learned that implementing R/3 is the most arduous project a company can face.

Computerworld's *Client/Server Journal* recently reported that many R/3 customers refuse to talk publicly about delays, exorbitant costs and the complexity that often derails deployment. Everyone flocks to the SAP camp only because there's no decent alternative in sight.

The status quo might change dramatically in the next year. The question facing intranet application developers is clear: Can you develop a series of intranet modules that rival the functionality of SAP's R/3 but are much cheaper and easier to deploy and maintain?

The answer to this question will dictate the future of business computing.

Evidence of the nascent potential of intranet applications can be seen at Sun's Java World Wide Web site (http://java.sun.com). In the Java Financial Portfolio demonstration, a single interface gives a broker access to a custom stock ticker that flashes across the screen, a spreadsheet that calculates the portfolio in real time, a program that charts the various stocks in the portfolio and a news applet that gathers wire-service reports about the stocks.

It's clear that, with Java applets and other Web technology, it's feasible to develop modules that rival anything SAP R/3 provides. It should also prove far less costly and more scalable.

But heed this note of caution. Intranets aren't immune from issues such as complex client/server applications, hardware and software upgrades, demands for faster networks and escalating personnel costs. There will be no dearth of projects on which to squander money; chief information officers must be careful to select intranet projects with a high business impact.

Nevertheless, there's no doubt that the age of intranets has arrived.

Kalakota is an assistant professor of IS at the Simon School at the University of Rochester in New York. Whinston is a professor of IS at the University of Texas at Austin. They are co-authors of *Frontiers of Electronic Commerce*.

It's amazing what data can do if you arrange it properly.

What computer company do you work with?

You should be working with Hewlett-Packard. HP's scalable Open Warehouse solutions, which combine best-in-class software with servers, consulting services and network and systems management, have helped thousands of companies around the globe put actionable information into the hands of the right users. If the business decisions are yours, the computer system should be ours.

Hewlett-Packard Computer Systems

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Price war could greet NEC's new PC line, 41

Smart phone has a hitch: No go in U.S.

By Stewart Deck

A new palmtop computer/digital cellular phone may have the features needed to please mobile users, but there's one catch: You can't use it in the U.S.

The OmniGo 700LX Communicator Plus from Hewlett-Packard Co. and Nokia Mobile Phones offers mobile professionals a cellular phone and organizer with spreadsheet, all in a 14-ounce package.

The sticking point is that the computer combo package functions on a digital cellular network. The U.S. cellular voice network runs over an analog network, but there are multiple protocols available. Europe and parts of Asia, where OmniGo is available, have a common digital cellular network called Global System for Mobile communications.

Competing protocols

"Hewlett-Packard doesn't want to have to make a different machine to fit all of the protocols currently available in the U.S.," said Andrew Seybold, editor of "Outlook on Communications and Computing," a newsletter in Brookdale, Calif.

Seybold said until one of two competing digital cellular technologies — Code Division Multiple Access or Time Division Multiple Access — becomes a common technology nationwide, the OmniGo idea won't work here. He said he doesn't foresee this happening for five years or so.

Seybold cited the effective integration of two different devices as the reason users will find the OmniGo 700LX interesting. Users connect a small, Nokia digital telephone to an HP palmtop computer through a simple docking station-type slot. The two machines let users send and receive information by voice and fax, send and receive electronic mail and access the Internet and on-line services.

The two devices also can be used independently. HP's OmniGo includes Intuit, Inc.'s Pocket Quicken and Lotus Development Corp.'s 1-2-3. It also includes a variety of personal organizer features: an appointment book with alarms and calendars, a general phone book database and a simple text processor. A serial interface connects the OmniGo to other computers and printers for data transfer, network access and printing.

On the communications side, OmniGo includes Lotus' CC:Mail Mobile and Traveling Software, Inc.'s LapLink Remote Access.

This smart phone/data communication combination, which costs approximately $1,000, may sound similar to BellSouth Corp.'s Simon. Simon was released in August 1994. Seybold said OmniGo is an entirely different machine.

"This is a complete data machine with a complete cellular voice phone," he said. "Simon had a short battery life, the screen was hard to read and to look at the screen while talking on the phone, you had to take the phone away from your ear."

Seybold called the OmniGo "an ideal product" for mobile users who want to combine their portable phone and PC.

It is if you live in Europe, or if you can wait about five years.

The OmniGo 700LX Communicator Plus *from HP and Nokia can be used in tandem, or the two devices can be used independently.*

Bundling up for the Web

These networking and communications capabilities are becoming increasingly common on PC servers:

- Integrated network interface cards, hubs and routers
- Application sharing and collaboration software
- Asset and systems management capabilities over the Internet
- Intelligent agent software for easy installation and configuration
- Intelligent I/O subsystems for better systems performance

Server integration seen as users' boon

Wide availability expected by fourth quarter

By Jaikumar Vijayan

Hardware vendors hungry to cash in on Internet interest are accelerating the integration of networking and communications features into PC servers.

For users, such integration means PC servers with better connections to the enterprise network, better systems and network management capabilities and more robust systems performance (see chart).

"I can see such efforts definitely aiding attempts to integrate Web servers into the enterprise network," said Sean Gilbert, MIS manager at Card-Service International in Agoura Hills, Calif.

Gilbert said fitting a World Wide Web server into existing networks involves high levels of integration. Bundled Web servers ease some of these integration problems.

"It's just going to make life a lot easier for [information systems]," said Doug Murphy, director of MIS at Comcast Corp. in Philadelphia.

Price expectations

Analysts estimated that integrated Web servers will become widely available in the fourth quarter. They said they expect to see them integrate network and communication hooks such as 100M bit/sec. network interface cards, routers, hubs and systems management software. Prices should fall in the $4,500 to $6,500 range.

Some of these features are available on PC servers, but typically they are on high-end systems.

"We are getting closer and closer to the precooked Web server. All that users have to do is take one out of the box and plug it into the 'net,' said Cheryl Currid, president of Currid and Co., a consultancy in Houston.

As vendors compete in what is going to be an increasingly commoditized market space, some will begin to offer application-specific Web servers, said Rick Whiting, an analyst at Summit Strategies, Inc. in Boston.

Among vendors expected to release tightly integrated Web servers are Compaq Computer Corp., IBM PC Co., Hewlett-Packard Co. and Dell Computer Corp.

Such integration, said Compaq officials, is being driven by user demand.

"Increasingly, when people implement Web-based servers, they really are tying it into the backbone network and also tying it into the external Internet infrastructure," said Tejas Vakil, director of North American systems marketing at Compaq in Houston.

Compaq, like IBM and HP, is preparing a range of application-specific Web servers such as secure commerce servers.

Meanwhile, IBM recently announced a new version of its System-View 4.0 systems management software that allows users to manage LAN-connected PCs over the Internet [CW, March 4].

Chipmaker Intel Corp. also is working on what it calls an "optimized Web server" reference design that it will make widely available to systems vendors in the third quarter.

The Pentium Pro-based server design will incorporate several performance boosters, including intelligent I/O subsystems, routers and Web software installation and configuration tools.

Intel confirmed it was working on such a design but didn't offer details.

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Europe hot for Acer, not for Escom

By Terho Uimonen and Torsten Busse

The temperature gauge for some hardware makers in Europe is running from hot to cold.

For Taiwan-based Acer Group, Europe is a hot spot — and its next expansion target after its successful breakthrough into the Top 10 in the U.S. For German PC power Escom AG, things are very cold right now, since the company posted a loss.

"This is the year of Europe for Acer," said Stan Shih, chairman and CEO of Taiwan's largest PC maker.

Acer will invest $40 million in its European operations and construct an assembly plant in France in the process. It will also significantly boost brand promotion and marketing expenses.

Shih said Acer expects the consumer market to provide most of the company's growth, which in turn will help Acer create economies of scale that will aid its efforts in the higher-margin corporate market.

Meanwhile, Escom in Heppenheim, Germany, expected a loss but is now warning that its losses could be triple those expected, after weak sales in Germany left it with high levels of inventory. Escom officials also said the company's sales appear to be nearly a billion marks lower than expected.

Passing the hat

Escom is seeking $69 million in loans to help it stay afloat. The company blamed a variety of factors for its worse-than-expected results: slow sales growth in Germany, which is suffering its highest unemployment rate since World War II; acquisition and start-up costs for British retail chain Rumbelows; and component shortages and delays in the production of its new Commodore and Amiga lines. It also cited PC price wars and price declines.

Analysts said Escom's long-term recovery depends largely on Germany's overall economic well-being because the company generates most of its revenue at home.

"This is [a problem] that goes beyond the shifts in the PC industry but depends on the amount of disposable income consumers have available," said Sandy Cals-Sommers, a research analyst at Dataquest Europe in London.

Uimonen is an IDG News Service correspondent in Taipei, Taiwan. Busse is an IDG News Service correspondent in Munich, Germany.

Price war could greet NEC line

By Jaikumar Vijayan

NEC Technologies, Inc. last week introduced several models to its entry-level commercial PC lineup, including a low-cost Internet PC.

NEC's new PowerMate V corporate models start near $1,200 but come at a time when the PC market appears set for another brutal price war.

Desktop market leader Compaq Computer Corp. last week dropped prices across the board on its commercial PC lines, and others such as Hewlett-Packard Co. and IBM PC Co. appear set to respond in kind.

Under pressure

As a result, NEC's new systems may feel some unexpected pricing pressure, analysts said.

"NEC's systems are reasonably competitive within their space, but Compaq's latest offerings have raised the bar somewhat," said Chris Goodhue, an analyst at Gartner Group, Inc. in Stamford, Conn.

The systems, however, are ideal for low-end, single-application environments, he said.

The PowerMate V models are based on Intel Corp.'s 75-, 100- and 133-MHz Pentium chips and will replace all existing 486-based models. The systems come standard with 8M bytes of RAM, 850M bytes hard disks, 64-bit graphics and infrared communications. Prices start at $1,466.

The newly introduced PowerMate Ve series boasts similar features but has no cache and starts at about $1,300. The company plans to position these systems as low-cost terminals that can be hooked up to the Internet for World Wide Web access.

NEC's PowerMate Ve

CPU: 75-MHz and 100-MHz Pentium

Standard memory: 8M bytes

Hard drive: 635M bytes

Graphics: 64-bit Peripheral Component Interconnect-accelerated

Optional: 4-speed CD-ROM drive, modem, interface cards, fax, and speaker

Availability: April

Starting price: $1,300

Enhanced support

Mountain View, Calif.-based NEC also announced it is enhancing customer support for commercial users with the addition of a dedicated, toll-free line for corporate customers, resellers and government buyers.

New Products

Advanced Logic Research, Inc. has introduced ALR Evolution 6, a minitower PC.

According to the Irvine, Calif., company, ALR Evolution 6, based on Intel Corp.'s Pentium Pro chip, offers speeds of 150 or 200 MHz and up to 128M bytes of RAM. It was designed for deadline-driven applications, including computer-aided design and manufacturing, financial analysis and graphics manipulation.

ALR Evolution 6 comes with a lockable minitower chassis with six drive bays and a 200-W power supply. It uses an ATX specification system board, giving all six available expansion slots the ability to accommodate full-length adapters. It includes two-level password protection.

Pricing for ALR Evolution 6 starts at $3,495 for a system that features a 150-MHz Pentium Pro chip with an integrated 256K-byte data cache and 16M bytes of RAM. The 200-MHz models start at $3,995.

▶ *Advanced Logic Research (714) 581-6770*

New Dimensions Software Ltd. has announced Enterprise Production Management, a systems management product.

According to the Irvine, Calif., company, Enterprise Production Management provides a focal point of control for managing complex, distributed environments and lets operations personnel incorporate all events into a production schedule. It features interoperability among multiple platforms, including applications that run on IBM's OS/2 and MVS systems, Windows NT and most Unix platforms.

Pricing for a base configuration of Enterprise Production Management starts at $35,000.

▶ *New Dimensions Software (714) 757-4300*

Storage Dimensions has announced SuperFlex 5000, a RAID storage system for midrange servers from Sun Microsystems, Inc.

According to the Milpitas, Calif., company, SuperFlex 5000 is a highly resilient, economical RAID storage system for Sun's SPARCserver 20, UltraServer 1 and SPARCserver 1000 servers. It features dual redundant controllers and comes standard with a differential Fast/Wide SCSI interface to the host.

SuperFlex 5000 incorporates seven bays, each capable of housing a 3½-in., 2G- or 4G-byte, 7,200-rpm disk drive module. In the event of a power failure, SuperFlex 5000's battery-backed cache preserves cache contents for up to 48 hours.

Pricing starts at $15,500 for a model configured with three 2G-byte drives and dual redundant controllers.

▶ *Storage Dimensions (408) 954-0710*

Swan Technologies Corp. has introduced the family of Swan 166-MHz, Intel Corp. Pentium processor-based PCs.

According to the Marlboro, Mass., company, the Swan PowerHouse model features extended data output (EDO) dynamic RAM, pipeline burst cache, enhanced 2M-byte EDO video with MPEG, a six-speed CD-ROM drive and a 1G-byte hard drive.

The PCs' 64-bit graphics accelerator was designed for smooth-flowing graphics images. They also feature EDO video memory for graphics acceleration and software-based support for MPEG video technology.

Pricing for the new line of Swan PCs starts at $2,099.

▶ *Swan Technologies (508) 460-1977*

Product short

NEC's MultiSpin 6V is a six-speed CD-ROM reader

NEC Technologies, Inc. has introduced MultiSpin 6V, a six-speed CD-ROM reader with data transfer rates of 900K byte/sec. It has a self-cleaning lens and can be used in either a vertical or horizontal configuration. It costs $179. NEC Technologies, Boxboro, Mass., (508) 264-8000.

The Apple Macintosh

Briefs

StorageTek sells off a piece

In a move designed to focus on its core storage business, Storage Technology Corp. in Louisville, Colo., recently sold its leasing business to Leasetec Corp. in Boulder, Colo.

Dell has solid earnings growth

Powered by strong growth in the sales of its notebook products, direct marketing giant Dell Computer Corp. in Austin, Texas, reported earnings of $272 million on revenue of $5.3 billion for fiscal 1996. This compares with profits of $149 million on revenue of $3.5 billion recorded in 1995. The year saw Dell, which has been trying to make a comeback in the notebook market, shooting up to seventh place worldwide in the portables market.

Sun opens test center for enterprise servers

As part of its effort to become a bigger factor in the commercial server market, Sun Microsystems, Inc. has opened an enterprise server testing center in Mountain View, Calif. Sun plans to use the facility to replicate large customer configurations for support purposes. It will also play a role in development of large-scale servers, Sun said.

Microsoft

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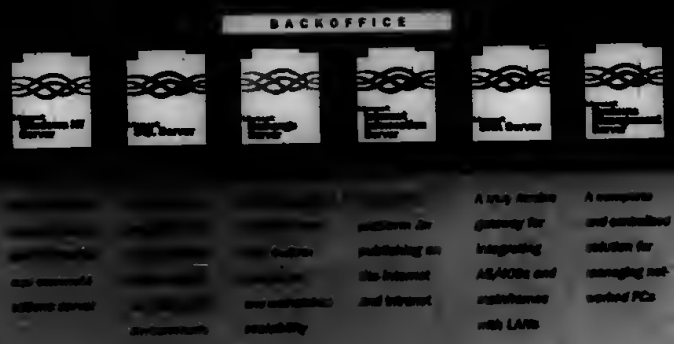

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Lotus

Lotus

Powersoft tool kit expands the possibilities, 48

Software

It's the real thing

Exchange Server will debut this month

By Tim Ouellette

Users who have been beta-testing Microsoft Corp.'s Exchange Server say it's ready for the real world.

It's a good thing, too, because Microsoft is rolling out the long-awaited Exchange Server after two years of product tests. Exchange Server is client/server messaging software that integrates groupware features such as discussion groups and document sharing. The software will make its debut at Networld/Interop '96 at the end of March.

"We are in the process of rolling it out into production here now," said Erik Iversen, director of application development services at RJR Nabisco, Inc. in Parsippany, N.J. The company will move 7,000 Microsoft Mail mailboxes to Exchange Server.

Client/server messaging

Shell Oil Co. in Houston, Federated Department Stores, Inc. in New York and Intergraph Corp. in Huntsville, Ala., also are using the Exchange Server beta. Microsoft estimated there are 40,000 beta production seats and another 16,000 at Microsoft itself.

Some might question the deployment of beta software, but Nicole Chittenden, information systems specialist at the University of Vermont's School of Business Administration, said the beta versions of Exchange Server are more stable than the gateways that come with Microsoft Mail, Microsoft's existing messaging software.

The business school has about 700 Exchange accounts now in use by students and faculty. This is an improvement from Mail, which "went dead" when it tried to handle just 500 users on two post offices, Chittenden said.

In response to oser concerns that the Exchange Server client can hog resources, Exchange Server product manager Greg Lobdell said most Windows 95 and Windows NT users already have the up to 16M bytes of RAM needed to run Exchange. And Windows 3.1 sites could still use 4M-byte machines to run the client efficiently.

Good value

Pricing for Exchange Server is expected to run in the same range as that of Lotus Development Corp.'s Notes. Like Exchange, Notes 4.0 uses a lot of resources on the desktop, but Notes also provides a more robust development environment and integrated groupware features than Exchange Server.

Most industry watchers said Exchange Server's strength will be as a messaging product, not as a groupware alternative to Notes. But some said they think that could change over time. The easy access to messaging with Windows 95 clients could open the door to adding more groupware features down the road.

Exchange Server could offer "guerrilla groupware" features after a large number of users have started to use the software for messaging, said Steve Weissman, president of Kinetic Information, a consultancy in Waltham, Mass.

Report upgrades have the write stuff

By Dan Richman

Information Builders, Inc. in New York last week announced upgraded versions of its Windows report-writing products. The upgrades feature a new language that two beta users say makes the products far more useful.

The product family, now called Focus Six for Windows, contains two new products and six upgrades from Version 1.2 of the Focus for Windows line. Some of the upgrades have been renamed.

The two new products are Managed Reporter Edition and its administrator's kit. Together, the products let end users make wide-ranging queries but within boundaries set by information systems staffers. The idea is to make users less dependent on IS, while still limiting the extent to which they can bog down or crash a system with unreasonably demanding queries, said Dan Collins, director of product management.

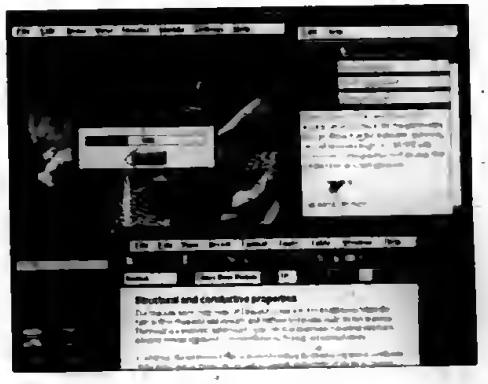
The other six products in Focus

Focus, page 52

Report roundup

Reporter Edition	Allows access to any data. Font and color can be set to change automatically.
Managed Reporter Edition	Allows access to data chosen by the administrator.
Managed Reporter Administrator's Kit	Lets administrator control what data is accessible to users of Managed Reporter Edition.
Developer's Toolkit	Builds complete, self-contained reporting applications; includes a new data-manipulation language.
Report Server	Schedules and automatically distributes report; allows distribution of reports through Lotus Notes.

The first changes *users will notice in Windows NT 4.0 is the addition of the Windows 95 interface — with its Start button, Task Bar and Explorer (above) — in place of the Windows 3.1-style screens used on earlier NT versions (below)*



NT4.0 looks good in beta version

By Mark Minasi

Microsoft's NT Workstation 4.0 combines the industrial-strength robustness of Windows NT and the attractive graphical user interface (GUI) of Windows 95 — but it lacks some important Windows 95 features.

In contrast, network administrators who use NT Server shouldn't expect much new; Server NT 4.0 is mainly Version 3.51 with a GUI — and that's fine.

Microsoft Corp. clearly has chosen not to mess too much with success. The early 4.0 beta shows some strengths in its Windows 95-like GUI, a fantastic new network troubleshooting tool, good NetWare compatibility and support for multiple hardware configurations.

Unfortunately, this version suffers from some big weaknesses, including the lack of Windows 95's terrific System Policy Editor, its Device Manager and Plug and Play.

Review

First, the good news: Network administrators will have a pretty easy time moving from NT 3.51 to 4.0. Most of the basic administration tools — Us-

NT 4.0, page 52

hard

BUT if that MIPS™ RISC processor goes three times faster than a Pentium™ processor on Windows NT,™ move yourself over to that telephone.

'Cuz honey,

you'll be as sorry

as me.

See, I had a chance like that once, long before there were any computers, and big Fortune 500 companies were even usin' processors like that quick little MIPS RISC thing.

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'Howdy miss,' he said, 'I'm sure you're aware of this new refreshment that's sweepin' the south.'

Then he held up that bottle.

'Well,' he went on, 'we're lookin' for investors, 'cause we want to expand.'

Then I said, 'Mister, I sure do like your drink, but tryin' new things like that really isn't in my nature.'

'Suit yourself', he says, tips his hat, and walks away.

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So when I heard NEC's 250 MHz V_R4400™ runs Windows NT up to three times faster than that 100 MHz Pentium processor, I wanted to hear more.

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So I sat here thinkin', if things were different, and I was one of those stressed-out computer executives, I'd say to myself, here's a chance to make my mark, just like I coulda' done almost a lifetime ago.

Well, that's my story, thanks for listenin'. Darn! I wish I had the time to tell ya' about all the companies makin' those MIPS-based systems. You better give those folks at NEC a call at 1-800-366-9782 and ask for Info Pack #185. That'll get you started.

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Peter Winston

The Java bandwagon: How to time your jump

Java, Java, Java ... If the folks at Sun marketing measure their success in column inches, Java rules. After all, it isn't often that software technology created by a Unix company is featured simultaneously in *Time* and *Businessweek*.

Those sounds you hear, though, are development and IS managers everywhere rubbing their collective scalps and trying to figure out where and when to start using Java to make their lives easier.

The fact to remember when considering how and when to use Java is that it is a third-generation language environment. For the moment, it is heavy on the language and light on the environment. The decision about when to start learning about Java and developing Java applications will depend on why it's being used and how much tolerance you have for an incomplete and potentially unstable environment.

For example, the graphical user interface tool kit for Java — the Abstract Window Toolkit — is weak and needs to be extended or replaced. And all current Java compilers compile to byte codes, which are then interpreted. Java applications that run in this environment don't perform well.

Help on the way

The environment that surrounds the language will mature quickly, however, driven by the Internet phenomenon. And better support for libraries and native compilers should be readily available later this year. At that time, a pilot project that uses Java as the development language will have a chance to succeed.

Another use for Java is for cross-platform development and deployment. Most cross-platform development environments today are highly proprietary efforts that are owned by very small companies with little or no aftermarket for additional tools and no second source.

But Java is a cross-platform environment that is supported by a public definition. This allows for third-party products and other implementations of the language.

Despite these strengths, choosing Java even for cross-platform development will be tough for at least six months, for the reasons noted above.

Not surprisingly, the best sources of Java information are on the Internet. The newsgroup comp.lang.java is the primary conversation area for current Java developers. The best Java World Wide Web site is Sun's at http://www.javasoft.com.

There are several events coming up that will benefit developers who are considering Java, including IntraNet New York, which will be held April 8 to 10.

Information about upcoming events is at http://www.mfi.com/webdev and http://developer.netscape.com.

Winston is president and CEO of Integrated Computer Solutions in Cambridge, Mass. He can be reached at http://www.ics.com.

Powersoft's tool set speeds data modeling

By Frank Hayes

Powersoft Corp. last week unveiled an expanded version of S-Designor, the firm's Windows-based analysis and design tool set. Early users said the new version will begin to break through the walls that some rapid development tools are hitting.

S-Designor lets developers who use rapid development tools such as Powersoft's PowerBuilder and Microsoft Corp.'s Visual Basic create formal models of the data they will use for applications. This allows new programs to be prototyped and tested more easily, users said.

But the new version, which will ship by the end of the month, adds graphical tools that let developers create models of application processes and data flow, according to Powersoft in Concord, Mass., a subsidiary of Sybase, Inc.

"More and more users like us are using S-Designor's data modeling, but we want to go to a higher level to model the process," said John DiFranco, a database specialist at New England Circuit Exchange in Peabody, Mass.

The combination of graphical data and process modeling can give developers a very fast start on even complex applications, he said.

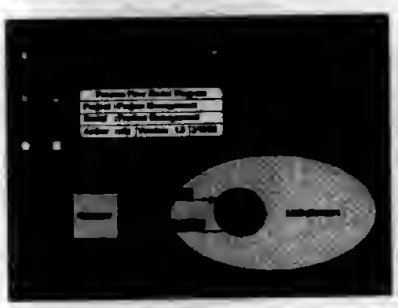
Many developers who use rapid development tools run into problems because they think "rapid development" means they don't have to design their applications carefully, said Duncan Dwelle, a former corporate chief information officer. He is now president of Applied Information Science International, a consulting firm in Sausalito, Calif.

"They just want to get on with the results, but they're the ones [who] always have to tear the code apart and throw it away and start over" when it's time to change or scale up applications, Dwelle said.

Developers can use S-Designor 5.0 to graphically design an application's process by using object-oriented or traditional data flow diagrams. Those models can be imported into S-Designor's data modeling module.

The data models can be used with PowerBuilder, Visual Basic and other widely used development tools.

S-Designor 5.0 also can generate PowerBuilder code that can be used as the core of complete applications — an ability that will be extended to Visual Basic by June and possibly to Borland International, Inc.'s Delphi later this year.



S-Designor 5.0 *lets developers design an application's process by using object-oriented or traditional data flow diagrams*

S-Designor 5.0 is quick and easy to use, but developers who are accustomed to full-scale object modeling tools may be disappointed. "They're obviously moving in the direction of integrated object-oriented and process design, but it isn't all there yet," Dwelle said. A fully object-oriented version of S-Designor won't arrive until Version 6.0 next year, according to Powersoft.

New Products

Sophos PLC has introduced Sweep for Windows 95.

According to the Abingdon, England, company, Sweep for Windows 95 is an antivirus product that runs as a native, 32-bit application. It has a graphical user interface and an on-line virus database.

Viruses are detected by using the advanced Virus Description Language, which allows the distribution of urgent updates by any means, including fax and electronic mail.

Sweep for Windows 95 is free.

Evaluation copies and more information are available at http://www.sophos.com.

▶ *Sophos*
01 235 55-9933

Appintec Corp. has introduced ActionWare400, a topic management system.

According to the Emeryville, Calif., company, ActionWare400 lets IBM AS/400 users manage a database of contacts and activities.

Users can type a single word that relates to a client or activity and thereby track contacts, products and opportunities company-wide.

ActionWare400 features a database account manager, an activity manager and a campaign manager. The product also features inbound and outbound call handling and electronic-mail and mail handling.

Pricing for ActionWare400 starts at $12,500 for a five-user pack.

▶ *Appintec*
(510) 450-1550

Briefs

Crescent adds Visual Basic tools

The Crescent division of Progress Software Corp. in Bedford, Mass., last week said it will add third-party products and reorganize its packages of components for Microsoft Corp.'s Visual Basic. Crescent's ClassAction, a tool set for easily accessing Windows programming interfaces from within Visual Basic, will ship this month for $139. BuilBench, a collection of code management tools, will ship in March for $119. Crescent has reorganized its PowerPak components packages into a professional edition, which shipped last month and costs $399, and an enterprise edition that will ship this month and costs $1,399.

Late entry

Version 3.0 of New Era, the graphical development tool from Informix Software, Inc., will be about three months late but will include features not originally intended for the version. These include a step-by-step guide to the job of partitioning logic among servers, support for Microsoft Corp.'s OLE, and a repository for centralized storage of application components. New Era 3.0 was due this month but is now promised by July 1. Pricing hasn't been set.

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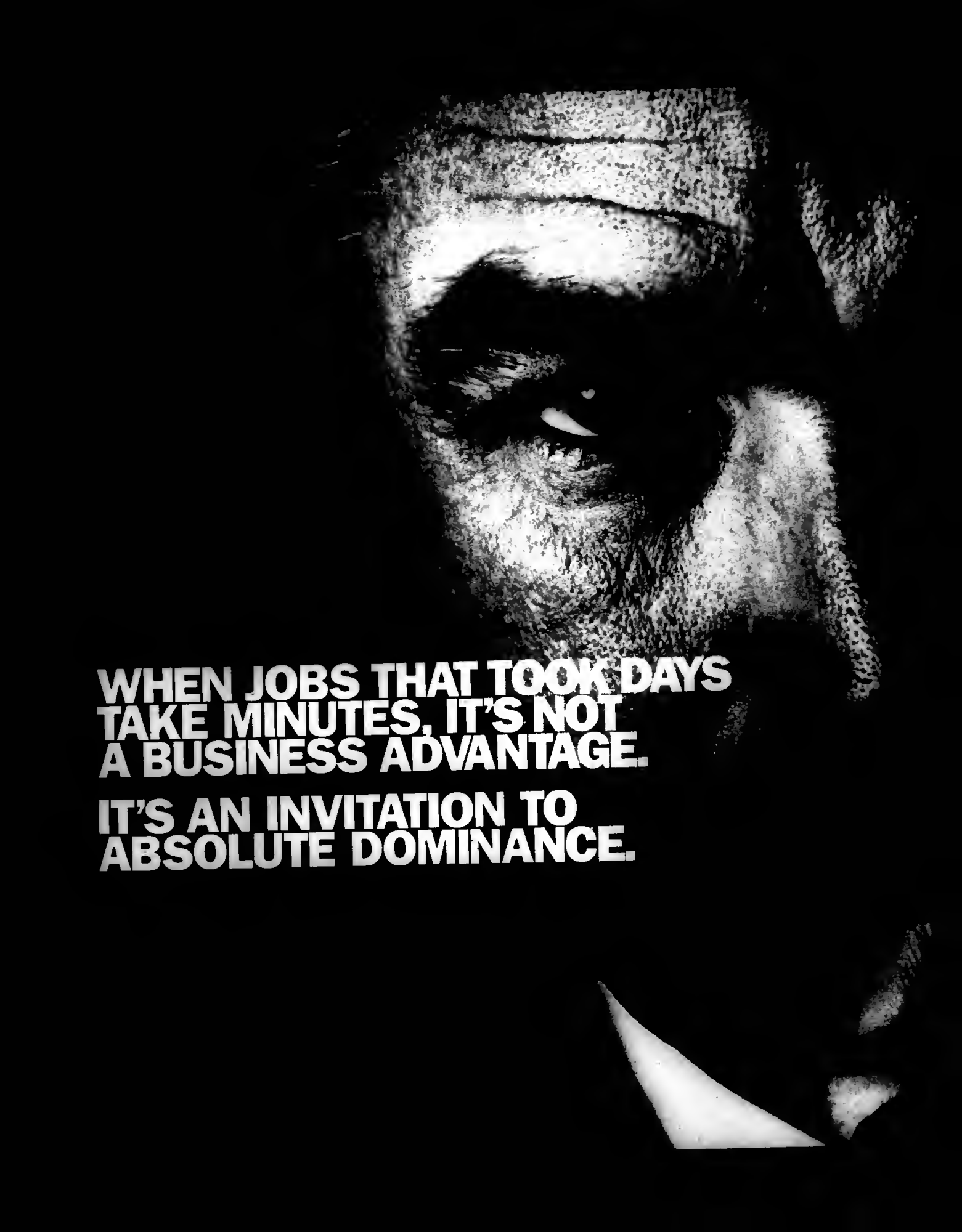
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NT 4.0 makes good appearance in beta

Microsoft retains most basic administration tools

CONTINUED FROM PAGE 45

er Manager for Domains, Server Manager, Event Viewer, Performance Monitor, Print Manager, NTbackup, DHCP Manager, WINS Manager, License Manager and User Profile Editor — are virtually unchanged from their earlier versions. Time spent retraining administrators on these tools will be zero.

NT Server 4.0's most interesting new component is a limited-function version of Network Monitor (Netmon), a network protocol analyzer/sniffer. It captures and analyzes network traffic and can be useful in troubleshooting. Unfortunately, Microsoft crippled Netmon by allowing it to monitor traffic only to and from your server. Still, it's a nice touch.

More on the upside

More good news in the basic administration tools: The NT Diagnostics program is a bit more useful. You get the same information as before, but it's organized better.

The Network Client Administrator looks almost identical to its 3.x cousins, but it no longer includes Windows for Workgroups as a client option. However, I believe Windows for Workgroups just isn't relevant anymore.

Speaking of NT Server 4.0's client software, the Windows 95-based tools that let you administer an NT network now ship with the network software. With NT Server 3.51, you had to buy the Resource Kit to get them.

Support for multiple hardware configurations means users won't have to reconfigure their machines every time they put a laptop into a docking station. No longer do you have to poke around the Registry to see what devices your SCSI adapter recognizes; there's a Control Panel applet called SCSI Adapters to handle that.

Review

Like Windows 95, NT 4.0 includes everything you need to connect to a NetWare server. Unlike Windows 95, NT's client software for NetWare is NetWare Directory Services-aware, so you don't need to get on Microsoft's World Wide Web site and download files to connect to your NetWare 4.x servers.

As with Windows 95, the interface with NetWare is practically seamless — NetWare servers appear in the Network Neighborhood folder alongside NT servers. There is no support for client-side virtual loadable modules, however. So you'll have to find another answer if you're running NWADMIN.

Managers who use the Internet will like the Internet Information Server, which will be included in NT 4.0. (You can also download it from Microsoft's Web site.) It includes Microsoft's Web browser as well as a Web server. There's also a gopher server and a file transfer protocol server, but NT always had that.

NT 4.0's adoption of the Windows 95 GUI is an excellent move, but there's more that could have been taken from Windows 95. It doesn't get as much attention as the Windows 95 GUI, but Windows 95's built-in support of Plug and Play is much more important.

Plug and Play manifests itself in Windows 95's excellent device detection software and in its unified Device Manager, neither of which appear in the beta version we reviewed. The network card detection phase failed to recognize a 3Com 3C590 card, arguably the most popular Peripheral Component Interconnect Ethernet card, and could do no better detecting a Diamond Stealth Video 64 than asserting that it was an "S3 video board."

Security worries

Microsoft expects to greatly improve the device detection code by the time it ships the final 4.0 version, but the company will not support Plug and Play in NT 4.0. Unfortunately, this is probably 4.0's greatest weakness. According to Microsoft officials, security concerns make it difficult to implement Plug and Play in NT.

NT users will sorely miss the Device Manager. In Windows 95, it provides a central location for browsing installed hardware, checking device status and modifying hardware resources, including direct-memory access channels, IRQ levels, I/O addresses and memory addresses. The closest thing is the Windows NT Diagnostics, but it's a viewer, not an editor.

Certain basic annoyances live on in NT 4.0. First is the fact that the GUI associates a file with a program through the extension of the file, rather than by using a file attribute. Retaining this link to the old 8.3 filenaming convention is unworthy of this 21st-century operating system.

The GUI remembers which folders you left open when last you powered down but nothing else. How difficult would it be to build a "bookmark application programming interface" that would make it is possible for NT 4.0-aware applications to start up automatically and take you back to the cell, record or page you were last editing? Now, *that* would be information at your fingertips.

Sluggish response

Furthermore, the system is woefully static, requiring a reboot for even the simplest configuration change. Enabling the first-in first-out buffer on a communications port that wasn't in use required a reboot for the changes to take effect.

Also, compatibility with Windows 95 applications isn't perfect. Trying to load Lotus' SmartSuite 96 yielded an error, crashing any attempt at installation. Only by excluding Freelance could we install any SmartSuite applications on NT 4.0.

For years, NT has needed a Domain Naming System server, and 4.0 finally gets one.

It's been around in beta for more than a year, so our office has plenty of experience with using the beta version in combination with NT Server 3.51 and has had relatively good luck with it. We couldn't get the Domain Naming System server that ships in the 4.0 beta to work, but it should be OK by the time the shrink-wrapped version ships.

NT Server 4.0 misses a few opportunities (no Device Manager, System Policy Editor or basic Internet mail-relay support), but its strengths (new GUI, Network Monitor, Domain Naming System, Internet Information Server) will likely compel you to upgrade.

One thing is certain. NT's long suit has always been its stability and robustness, and Microsoft is keenly aware of that. So don't be surprised if 4.0 ships later rather than sooner. A rushed-out-the-door NT 4.0 would be about as well-received as was DOS 4.0.

Minasi is president of TechTeach International, a technical seminar firm in Arlington, Va. He can be reached at (mark@mmco.com).

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Report upgrades have the write stuff

CONTINUED FROM PAGE 45

Six for Windows improve on how data is displayed, the vendor said.

All eight pieces are set to ship by the middle of the month.

Report writers

Two beta users had high, though qualified, praise for Focus Six for Windows. They especially liked Maintain, a new language for browsing and updating Focus databases in real time from Windows. Focus for Windows products were generally graphical before this release but shifted to character mode when interacting with Focus data in real time.

"We had stopped developing Focus for Windows applications here because our own end users simply wouldn't put up with shifting back and forth between the ease of a graphical interface and the clumsiness or impossibility of a character interface," said John Mulvaney, a senior partner at Pinnacle Decision Systems, Inc., a consultancy in North Haven, Conn. The company is again developing Focus for Windows applications.

Frank Spooner, owner of Compasyst, Inc., a Focus alpha and beta site in Palgrave, Ontario, said, "Maintain is a great first step, and I like it, but it still doesn't have the flexibility of [Microsoft Corp.'s] Visual Basic or [Powersoft Corp.'s] PowerBuilder."

The other products have more flexibility in designing screens and provide better access to Windows application programming interfaces, he said.

Kurt Russell

Is there ever a

time

to upgrade your operating system?

Finding the perfect time to migrate

is like finding the perfect time to move the lawn.

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and the 32-bit applications that run on it can reduce your support costs,

increase your control over the desktop

and improve the productivity of end users.

In short, we'll address the issues that tend to forestall serious evaluation.

We'll even go so far as to suggest that waiting has costs of its own.

Support for IS.

Support for system administrators begins with support for end users. With its simplified interface, Windows 95 allows users to work far more independently than in the past. Simply put, the greater their autonomy, the less time you spend answering obvious questions.

But it's not just the interface that's improved; the whole system is more reliable. Thanks to the 32-bit protect-mode components of Windows 95, users can run multiple applications at the same time, without running out of system resources or freezing-up their PCs. The same is true even if a network server goes down. And, with 32-bit applications now able to run in their own memory space, the likelihood of one app crashing another is almost nil.

Today you can turn the desktop into the most tangible technology investment your company can make.

What's the upshot of all this? Well, it won't exactly turn you into the Maytag repairman, but it can cut helpdesk calls by 7 to 14% a year.[1]

Still, in designing a new OS, we realized that to make things easy for the end-user at the expense of the IS department would be self-defeating. And to that end, Windows 95 offers a variety of powerful tools to help you better manage your network and your time.

Built into Windows 95 are a number of tools to simplify administration. 32-bit versions of popular network clients, like Novell® NetWare® are included, as is support for standard transport protocols like TCP/IP and device standards. Plug and Play support detects hardware devices as they are added to the system, which makes installation a snap. And, with Server-based Setup and Batch Setup tools, it's now possible to install and configure Windows 95 on multiple desktops from a server. Automatically.

Once you're wired, you can monitor performance and troubleshoot problems from a central location.

More support: more control.

System Policies in Windows 95 allow you to specify system settings and restrict network access and security privileges from a central location. So you can lock down desktop configurations whenever you see fit. And with User Profiles, individual users' desktop configurations are available wherever they log on to the network. This lets multiple users share one computer and "roving" users log on to other networked computers, while maintaining their own personal settings.

Again, with Windows 95, all of this can be done from a central location, reducing the number of on-site visits by 30 to 50%.[2] At last, you'll be able to focus on the big-picture stuff. So the next time someone asks you what's what with this Internet thing, you can say, *I have a plan.*

Productivity from the word *Start.*

The improved interface in Windows 95 makes nearly everything easier for novice and advanced users alike. Its Start button and task bar make applications more accessible. Long filenames make identifying files easier. Better tools such as Wizards and improved Help make learning features easy. Its right mouse button puts common commands a click away. And now that the separate Program Manager, File Manager, and Print Manager are gone, there are fewer concepts to learn. This makes for able, autonomous, and, dare we say, happy end users. People who require less training and support. Who, in short, can turn the desktop into the most tangible technology investment your company can make.

But Windows 95 isn't just easier, it's more responsive. Basic operations, like printing or accessing a file on a PC or over a network, are faster. And with its 32-bit multitasking capability, users can conduct file searches, online communications, or other tasks all while, say, editing a document. In fact, studies show that once users are familiar with the new OS, they're able to accomplish many tasks in about half the time it took under Windows 3.1.[3]

Of course, no one spends their entire day tooling around in their operating system. People have work to do. With that

1. Technology Business Research, Inc., a market research firm, collected and analyzed the helpdesk logs of 10 Fortune 100 companies in order to project the impact of Windows 95 on call avoidance, problem resolution, and on-site call reduction. The logs represented 100,000 PC users and 1.5 million helpdesk calls per year. 2. Technology Business Research, Inc. 3. To quantify the learning curve from Windows 3.1 to Windows 95, and evaluate user productivity on Windows 95, Usability Sciences Corporation, an independent usability testing organization, had 75 beginner, intermediate, and advanced Windows 3.1 users complete tasks with both operating systems. They found that users were 91% more productive with Windows 95, and 94% more accurate. Tasks performed included: finding and opening files and programs, copying and moving files, and switching between active programs. 4. The MASIE Center, a recognized software training center and think-tank found that only one hour of briefing and

The prevailing wisdom and why, this time, you should ignore it.

Common sense tells you to hold off on making the move to Windows 95, to wait until someone else finds the bugs. Well, someone else already has. With the largest beta program in history, Windows 95 was installed on more than a million desktops worldwide. Now, just six months into its commercial release, thousands of organizations are in pilot and rollout. And to keep them current, we've put together an online Service Pack with the latest drivers and other new components. In short, the dreaded "1.0 version" has already come and gone.

in mind, no evaluation of Windows 95 would be complete without simultaneously evaluating some of the 32-bit applications designed for it, such as Microsoft Office for Windows 95.

Now users can focus on their work instead of their software.

Office 95 is more than just fresh features on top of Office 4.x. It's a deeply integrated suite of applications. Integrated, both with the operating system and with each other. Because users can leverage their knowledge of one application throughout the entire suite, they need only three hours of training to be effective in all of them.[4] Needless to say, this can dramatically reduce training costs.

But what about support? While it's one thing to get PC users up and running, it's quite another to teach them all the skills they'll ever need. And of course, you can't; users simply aren't interested. (Remember? They've got work to do.) Knowing this has made all the difference in designing Office 95. It's resulted in advances such as the Answer Wizard, which lets users ask the computer plain English questions like, *How do I print sideways?*, and then shows them exactly how to do it. As a result, you can expect a 48% reduction in Office-related help calls.[5]

With Office 95, users are not only able to work on their own, they're able to accomplish more things faster. Labor-saving features such as updated AutoFormat and Spell-It in Word, and enhanced AutoComplete in Microsoft Excel, not only render everyday tasks automatically, they do so accurately. According to Kelly Services, the folks who train and supply corporations with over 325,000 office professionals each year, users complete their tasks 37% faster with Office 95. And they're 36% more accurate in doing so.[6] Not a bad day at the office.

Why sooner is better than later.

If, as the headline says, there's never a good time to migrate, why make the move now? Why? Because deployment takes time. Product reviews, network configurations, lab tests, pilot programs, rollout — it takes time. And if the goal is to decide *Is it worth it?* and you continue to put off serious evaluation, it'll be that much longer before you begin to realize the productivity gains and cost savings that Windows 95 and Office 95 have to offer.

But let's assume you upgraded today. How long would it take to recoup your migration costs? According to a leading consulting firm, Office 95 will pay for itself in 10 months in medium-sized companies, and 12 months in large organizations.[7] Factor in the increase in end user productivity, and those numbers fall by nearly half.

No question about it, the move to 32-bits is a big one. But as part of the larger evolution in chip architecture, hardware platforms, and application support, it's not one that you or Microsoft is making alone. Won't you join us?

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two hours of self-discovery were required to migrate Office 4.3 users to Office 95. 5. Technology Business Research, Inc. 6. Kelly Services, Inc. conducted a controlled usability study of 35 employees who regularly use Office 4.3. Participants were measured for speed and accuracy in completing commonly performed tasks. 7. International Data Corporation modeled the expected returns on investment of Office 95 for large companies (1,000+ PCs) and for small-to-medium companies (100 PCs). On a cost-to-use basis, large companies will see their investment paid for in 12 months, small companies in 10. On a value-to-use basis, those figures drop substantially: 4.8 months for large companies, 5.3 months for small. © 1996 Microsoft Corporation. All rights reserved. Microsoft, Windows and Win32 are registered trademarks and Windows NT, the Windows Start logo, and *Where do you want to go today?* are trademarks of Microsoft. Novell and NetWare are registered trademarks of Novell, Inc.

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Globalization. Increased customer expectations. Rapidly changing technology. All of these hurdles add up to a major challenge for IT executives and the creation of the distributed enterprise. At ETS '96 you'll learn how leading edge companies are responding to the increasing pace of change and how they're facing a more competitive global marketplace. These four hard-hitting, provocative panel sessions of high-impact interaction, will focus on practical applications of emerging technologies.

Doing Business on the Internet

Panel Moderator:
Gay Slesinger
Vice President
Giga Information Group

Discover what this phenomena means to business and the distributed enterprise.

Find out if the Internet is "an aging technology looking for problems," or the prototype of a new world of networks that will change the face of business.

Enterprise Networking

Panel Moderator:
Tim Andrews
Vice President
CSC

Examine how the latest in converging communications technologies has been implemented to meet challenges faced by top corporations worldwide.

Hear candid discussion on building infrastructure, deploying high-speed communications, internetworking and implementing new broadband applications, which combine voice, data and images.

Enterprise Application Development

Panel Moderator:
Alan Alper
Editor
Computerworld
Client/Server Journal

Explore the latest advances in application development, including the "killer-app of the '90s," data warehousing.

Listen to panelists reveal which new advances in application development work...and which don't.

Distributed Systems Management

Panel Moderator:
Maryfran Johnson
News Editor
Computerworld

Learn how top CIOs faced and solved challenges such as tracking PC hardware and software, capacity planning, disaster management, roll back and recovery, systems tuning and more.

Determine how leading CIOs meet the technology expectations of top management and users.

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1996 Product of the Year for Data Warehousing

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MANAGEMENT REPORT

New Trends and Ideas in Information Management

SAS INSTITUTE

VOLUME 8, NUMBER 1

The SAS® Data Warehouse: Building Success with a Built-in Architecture

As the global marketplace grows more crowded and more competitive, the pressure is on for business analysts to arrive at the most informed, effective decisions. Unfortunately, these decisions are often fed by a steady diet of one-shot software packages...particularly on the desktop.

In response, IT managers everywhere—faced with the impossible task of supporting so many software tools from so many different vendors—are reevaluating the entire process of enterprise information delivery. What they're discovering is that technology for technology's sake does not facilitate better decision making.

The real challenge is identifying, implementing, and integrating just the right mix of technologies to meet both IT and business goals.

The SAS Data Warehouse helps you meet this challenge by bringing these core technologies together in a single, powerful, and integrated software environment.

The Only End-to-End Solution for Rapid Data Warehousing

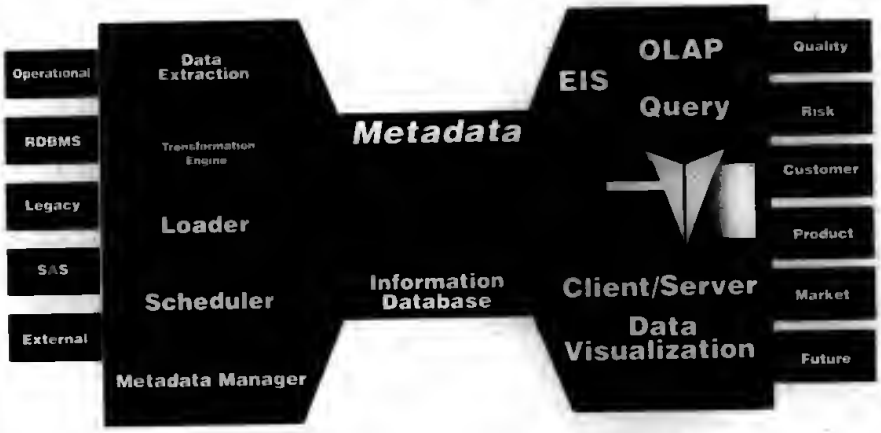
Within the SAS Data Warehouse, everything is fully integrated. The tools used to build the warehouse are the same ones used to maintain it, run it, and change it. What's more, everything's scalable. You can jump right into enterprise-wide information delivery applications, or start small and then build on your success.

This single-source approach encompasses everything from back-end access to legacy systems to front-end decision support and business intelligence capabilities. In addition, you can develop applications quickly in response to changing business needs.

SAS data structures are relational by nature and have all the features necessary for data warehousing including indexing, compression, and a security model. However, unlike RDBMSs, they don't consume overhead for database features that aren't needed for data warehousing. You can reap all the benefits of data warehousing without having to invest in new technologies.

Once you have data in the warehouse, you can provide business users with a full range of capabilities for exploring data for effective decision making. Everything they need for data query and reporting, executive information systems, OLAP/multi-dimensional analysis, data mining, database marketing, data visualization, presentation graphics, and much more is instantly accessible... without ever leaving the SAS Data Warehouse.

The SAS® Data Warehouse



Management **Organization** **Exploitation**

The first step is **accessing operational data from wherever it resides, and in whatever format it embodies.** The SAS Data Warehouse taps directly into a variety of legacy databases... more than 50 different data structures across 15 diverse computing environments, from xbase files on the desktop to DB2® on the mainframe.

A powerful 4GL within the SAS Data Warehouse makes transforming data as straightforward as possible. In fact, we provide a relational model similar to commercial relational database management system (RDBMS) suppliers.

Once accessed, the SAS Data Warehouse begins **transforming data into a consistent, integrated form.** This process involves cleaning, reconciling, de-normalizing, and summarizing data and then loading the data into logical data views that can be surfaced into a variety of analytical and reporting applications.

A Faster Way to Adapt to Change...and to Deliver Targeted Business Solutions

The SAS Data Warehouse, by design, lets IT managers respond immediately to the evolving way business users need to extract data. Changes in your business model are quick to execute. Unlike relational databases, you don't have to rebuild the model from scratch.

Using an iterative approach to applications design and deployment, you can build a pilot application quickly. Then test the application, incorporate any feedback, and build on your success in every application that follows.

Business users will feel positive about the shorter applications development cycle. What's more, they'll feel *involved*... as IT managers and business units work together at each stage of development.

A Completely Open Architecture... to Protect Your IT Investment

The SAS Data Warehouse supports your client/server computing strategy. An exclusive MultiVendor Architecture™ means data and applications are portable across your entire hardware spectrum—from desktop PCs and workstations to midrange computers and mainframes.

In addition, the SAS Data Warehouse fully supports Open Database Connectivity (ODBC). Your data warehouse is always open to external applications, whatever they are and wherever they're located—including news wires, stock market data, and demographic or geographic data.

A Fresh Approach to Data Warehouse Management... and Reducing Your IT Workload

The SAS Data Warehouse provides a metadata structure that can dramatically decrease your administrative load. A built-in metabase defines where data comes from, how it is stored, what it represents, and how it can be used.

You can give business analysts complete control of what data is selected for specific decision support needs, while avoiding constant interrupts to your IT personnel.

Free Checklists for Data Warehousing Success...

Now Appearing on the World Wide Web at http://www.sas.com/

SAS Institute's World Wide Web site provides a wealth of information, about SAS Institute and our approach to data warehousing and enterprise-wide information delivery.

Working in conjunction with IT and business managers, we've developed a series of Checklists for Data Warehousing Success, which provide a fail-safe guide to the hows and whys of data warehousing. You'll find these Checklists under What's New on the SAS Institute WWW home page, or give us a call.

SAS

The SAS Data Warehouse

Merrill Lynch Grows a Grass Roots Data Warehouse

Merrill Lynch is one of the premier diversified global financial services companies, and heads the list of securities firms in the U.S., with assets of $243 billion.

When, in 1992, the systems area of Merrill Lynch's Quality Assurance Group began a project designed to provide even better service, they had no idea that what they were building was—in fact—a data warehouse, one of the hottest processes of the decade.

Nor did they realize that the new infrastructure—built using SAS software on the desktop—would lead to a three-fold increase in programmer/analyst productivity. This has allowed the Group to provide users with an increasing array of business-critical services without adding head count.

But the biggest surprise was that what began as a grass roots effort would evolve into a valuable source of information for the enterprise.

"The most important information now being supplied by the data warehouse is which services have a direct impact on customer satisfaction," says John Crawford, Manager of the Systems Area of the Quality Assurance Group. "We track service requests from our clients—everything from ordering a new book of checks to making massive money transfers—and provide the back-office people with summary and detail data for analysis. In addition, we collect invaluable information from Merrill Lynch's quarterly client satisfaction survey. Armed with this information, analysts can determine which service requests have the biggest impact on satisfaction and how the firm can better meet its clients' needs."

He adds that "It's the robustness of SAS software in the client/server environment that makes it possible for us to offer increasing information-based services to a growing number of users...this kind of effort can be expanded to include enterprise-wide management systems that can be used to analyze customer interactions, plan marketing initiatives, analyze risk, provide decision support to top management, and—in general—make Merrill Lynch even more competitive."

Yours Free...A Guide to The SAS Data Warehouse

Step inside the SAS Data Warehouse with our free preview. This guide explores every facet of data warehousing—from back-end data access to front-end decision support. Topics explored include:

- **Knowledge: the Critical Competitive Advantage**
- **Operational Systems versus Decision Support**
- **The Business Benefits of Data Warehousing**
- **Re-inventing the Shape and Form of Your Data**
- **Exploiting the Data Warehouse**

Also hear from industry experts, who comment on the unique benefits of the SAS Data Warehouse for meeting business and IT objectives. To receive your copy:

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'Turbocharged' TCP/IP switch unveiled, 60

The Enterprise Network

Getting frame relay at basement prices

Procurement experts offer advice on how to win deals

By Neal Weinberg
NEW YORK

Information systems managers who play their cards right can win discounts of up to 50% off published frame-relay rates.

That's the skinny from the frame-relay procurement experts, who recently shared their inside negotiating tactics with members of the Communication Managers of America (CMA).

Henry D. Levine, a partner at the Washington law firm of Levine, Blaszak, Block and Boothby, said published frame-relay rates are increasing.

But competitive pressures, heightened by telecommunications reform, are creating a market in which real-world frame-relay costs are plummeting, Levine said.

The upshot is that savvy IS managers can win rates that are up to 50% below the sticker price, as long as they follow some simple rules:

- **Never automatically re-up with a carrier.** Users should always put the incumbent on notice that the contract is going out for competitive bid.
- **Remember that prices are falling.** A long-term commitment may look good now but foolish two years from now.
- **Limit your commitment to a specific vendor.** Vendors are looking for five-year contracts in which the user commits 100% of his frame-relay traffic.

The trick on the customer side, Levine said, is to keep the percentage of traffic the company commits to a particular vendor as low as possible. As

Frame relay, page 64

Do	Don't
Bundle services and equipment	Take a VAR into your a permanent relationship by default
	Commit 100% of frame-relay traffic to one vendor
Build in penalties for network outages	Commit to a five-year deal

Users make do with few NT Server third-party applications

By Laura DiDio

There is no denying that 3-year-old Windows NT Server has far fewer third-party applications than its more mature rival NetWare.

There are fewer than four dozen third-party packages shipping for Microsoft Corp.'s Windows NT Server, compared with thousands for Novell, Inc.'s NetWare.

Despite the seeming shortfall in add-on applications for the NT Server environment, users said there are few major missing applications for the Windows NT Server environment; the notable exception is management utilities. For the most part, users said they have been sble to make do with what is available now.

Operating systems

"I haven't encountered any big showstoppers that have hindered my implementatioo of Windows NT Server," said Gary Campbell, a senior staff engineer at Perkin-Elmer Corp. in Wilton, Conn.

The third-party applications issue that confounded users the most wasn't the number of available applications, but rather the perception that many of the add-on packages aren't as finely tuned for Windows NT Server as they are for NetWare.

Easier with NetWare

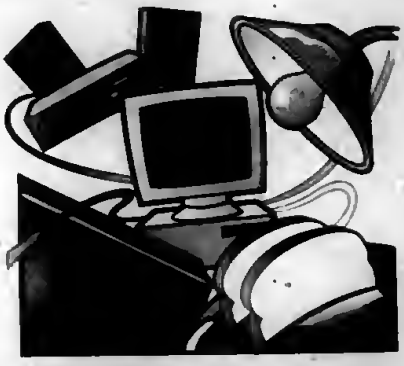
For instance, Campbell said the NT Server version of Executive Software International's DiskKeeper required Perkin-Elmer engineers to modify NT files, such as the network operating system kernel, during installation.

"Every time we get a new Microsoft Service Pack of NT Server enhancements, we have to uninstall DiskKeeper, install the Microsoft Service Pack and then reinstall DiskKeeper," Campbell said. "It's a real pain and an inconvenience. ... We don't have the same kind of tap dances with our NetWare version of the utility," he added.

Campbell said Executive Software has told him it will fix this problem in the product's next version.

Another user, Henry Eckstein, MIS director

NT Server, page 64



Novell feathers its NEST protocol kit

By Laura DiDio

Imagine using electric power lines to transfer corporate data. Or automating routine tasks such as setting the office temperature or programming the cappuccino machine.

Those capabilities sound far out, but they may become available in the next five years via Novell, Inc.'s Embedded Systems Technology (NEST). The company last week released an enhanced version of the NEST Software Developer's Kit that includes native TCP/IP support.

NetWare users will be able to connect to the Internet by using this standard protocol instead of Novell's proprietary IPX/SPX protocol.

Novell also is packaging its NEST Autoroute global document routing in the developer's kit for free. Novell formerly sold the Autoroute facility as a separate package priced at $50,000.

Internet protocols

NEST Autoroute allows manufacturers to add global document routing capabilities to fax, copy, scan and print devices. "So theoretically, scanned print documents could automatically be routed to a user's E-mail box," observed Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

NEST, which was announced a year ago, is Novell's method of taking core components of the NetWare network operating system and embedding them in consumer products such as fax servers, telephones and home appliances. The goal is to let home and office users control these devices via public and private networks.

Utilicorp United, Inc., in Kansas City, Mo., is an early NEST user and Novell partner. The utility supplies power in 17 Midwest states. Utilicorp is using the software to develop the NEST Powerline technology to let businesses create a smart energy network.

"The smart energy network based on NEST could perform tasks [such as] reading home and office electrical meters. This could eliminate the need for meter readers," Sakakeeny said.

He said embedding a piece of NetWare code in consumer devices to automate "every conceivable task" is still a dream but will likely become reality within five years.

"The market for embedded systems that NEST is targeting is still tiny, but it's good for Novell to do. It lets them establish a beachhead in an emerging industry, and it costs the company next to nothing since NEST relies on the core NetWare [network operating system] kernel," he said.

The NEST Software Developer's Kit 1.2 will ship at the end of March. It costs $50,000.

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'Turbocharged' TCP/IP switch unveiled

By Laura DiDio

Start-up Ipsilon Networks, Inc. has unveiled a switch that delivers full 155M bit/sec. ATM throughput and can route TCP/IP protocols at five times the speed of current devices.

The 16-port IP Switch ATM 1600 is due out this spring. It can switch or route as many as 5.3 million IP packets per second at full Asynchronous Transfer Mode (ATM) rates for less than $3,000 per port. ATM-only switches range in price from $1,500 per port to about $3,000. But there currently are no other switches available that meld TCP/IP switching and routing with ATM switching in a single device.

The switch doesn't require users to update their current switching or wiring infrastructure, said Larry Blair, the company's vice president of marketing.

Analysts said that only a niche market of high-end users exists for such a "turbocharged" TCP/IP switch. One is NASA's Ames Research Center in Mountain View, Calif., an IP 1600 beta tester.

Noemi Berry, a network development engineer at the Ames Center, said the switch may prove invaluable. "The Ipsilon switch gives NASA Ames the best of both worlds," Berry said. "It's a routed network that switches when it needs to, based on the [network] traffic characteristics." She added that from a host and applications perspective, the Ipsilon switch looks like "any other IP router."

- Has more than 2.3G bits of nonblocking bandwidth
- Has the ability to route TCP/IP protocols at 5.3 million packet/sec.
- Supports standard TCP/IP routing protocols
- Has hardware multicast support
- Has SNMP network management
- Has Web server-based management
- Availability: April
- List price: $46,000

Val Sribar, an analyst at Meta Group, Inc., a Reston, Va., consultancy, said "Ipsilon's focused agenda on scalable TCP/IP switching is a smart one because IP is the most important protocol for the next 10 years."

John Morency, an analyst at The Registry, Inc., a Stratham, N.H., consultancy, agreed. "Very few users need to switch or route TCP/IP protocols at 5 million packets per second," he said. He added that some potential users might be put off by the "proprietary nature" of the Ipsilon IP switch.

But proprietary doesn't necessarily mean bad, said Fred McClimans, an analyst at Decisys, Inc. in Sterling, Va. He agreed that Ipsilon's TCP/IP implementation is proprietary but said it eliminates the traditional data bottlenecks typically seen in TCP/IP routers.

"Ipsilon has taken a TCP/IP platform and married it to standards-based ATM hardware. This is exactly what users are looking for, and it's a great price point," McClimans said.

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STERLING SOFTWARE

Bob Wallace

Nothing but net

Here are a few observations that prove there's never a dull moment in the internetworking industry . . .

****

For $500,000, the owners of Candlestick Park changed its name to 3Com Park. Word has it that 3Com has offered California $1 million to change the name of the city from San FranCisco to San Fran3Com.

****

Although fewer and fewer IS managers think ATM on the wide-area network side stands for automated teller machine, some think it stands for Another Telco Mistake.

****

Some Bell operating companies have proposed huge rate hikes for ISDN service, and it's still not deployed widely, but a 3Com executive said at a recent small-office networking product rollout, "We picked ISDN as our WAN option for its ubiquity and cost."

****

Bay Networks was supposed to roll out LAN switching modules for its high-end System 5000 at the end of 1993 but just started shipping them a few weeks ago. The modules are based on technology Bay acquired when it bought start-up Centillion Networks last year. That begs the question, what would Bay have done for LAN switching modules if it hadn't bought Centillion?

> Honk if you're tired of the phrase "information superhighway."

****

Are there any small, technology-rich companies that Cisco Systems *hasn't* bought?

****

After a press announcement at ComNet, StrataCom officials handed out shirts that feature a small child wincing and the words "I survived another ATM press conference" underneath. Editors here are asking when a version that says "I survived another ATM product story" will be available.

****

Honk if you're tired of the phrase "information superhighway."

****

From a press release announcing a small-office networking product: "These products are designed for sites with one or fewer workers."

****

Are any companies *not* moving toward frame relay for their WANs?

****

File under "Where's the beef?": Hewlett-Packard recently sent out a press release announcing the company's largest-ever product announcement but provided no product names, descriptions, capabilities, prices or availability.

****

There soon may be a time when IS managers realize that Cascade Communications makes heavy-duty WAN network switches instead of dishwasher detergent.

****

Is there any networking product out there that *hasn't* won an award from a major weekly newspaper or monthly magazine?

****

It's frightening that date-flick star Sandra Bullock is trying to bring the Internet into our personal lives through movies such as *The Net*.

****

Name a vendor that hasn't announced or isn't working on a remote office router that uses ISDN lines.

****

So if ISDN, for the most part, can't be offered efficiently three miles beyond switching centers, why are the phone companies pushing it as *the* telecommuting service?

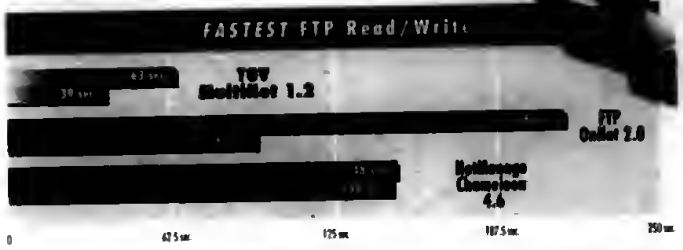
Wallace is *Computerworld*'s senior editor, internetworking.

THE FASTEST TCP/IP APPLICATIONS FOR WINDOWS.

FASTEST FTP FILE TRANSFER

MultiNet's FTP client is between 2X and 3X faster than either OnNet or Chameleon when transferring files over a TCP/IP network.

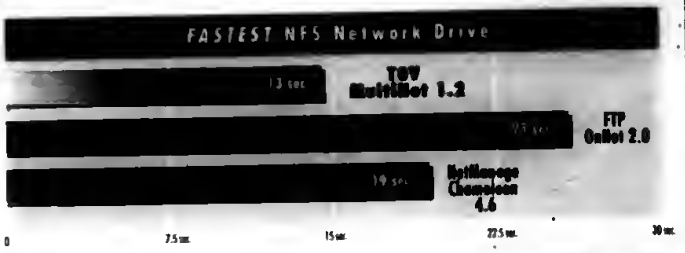
Results shown based on transferring a 20MB file between a Windows PC and a Sun SPARC server.



FASTEST APPLICATIONS LAUNCHING

MultiNet's NFS client is nearly 2X faster than OnNet and 50% faster than Chameleon when launching applications from an NFS server.

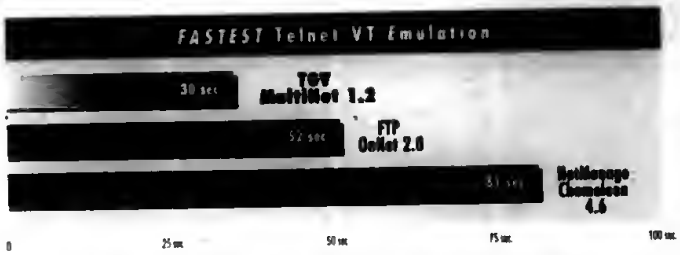
Results shown based on launching Microsoft PowerPoint 4.0 and opening a 1MB presentation from an NFS network drive on a Sun SPARC server.



FASTEST HOST APPLICATIONS DISPLAY

MultiNet's Telnet VT emulator refreshes multiple windows over 50% faster than OnNet and more than 2X faster than Chameleon. Each MultiNet window always displays the correct VT screen behavior.

Results shown based on running a freely available terminal test in three windows simultaneously on a Windows PC from a Sun SPARC server.



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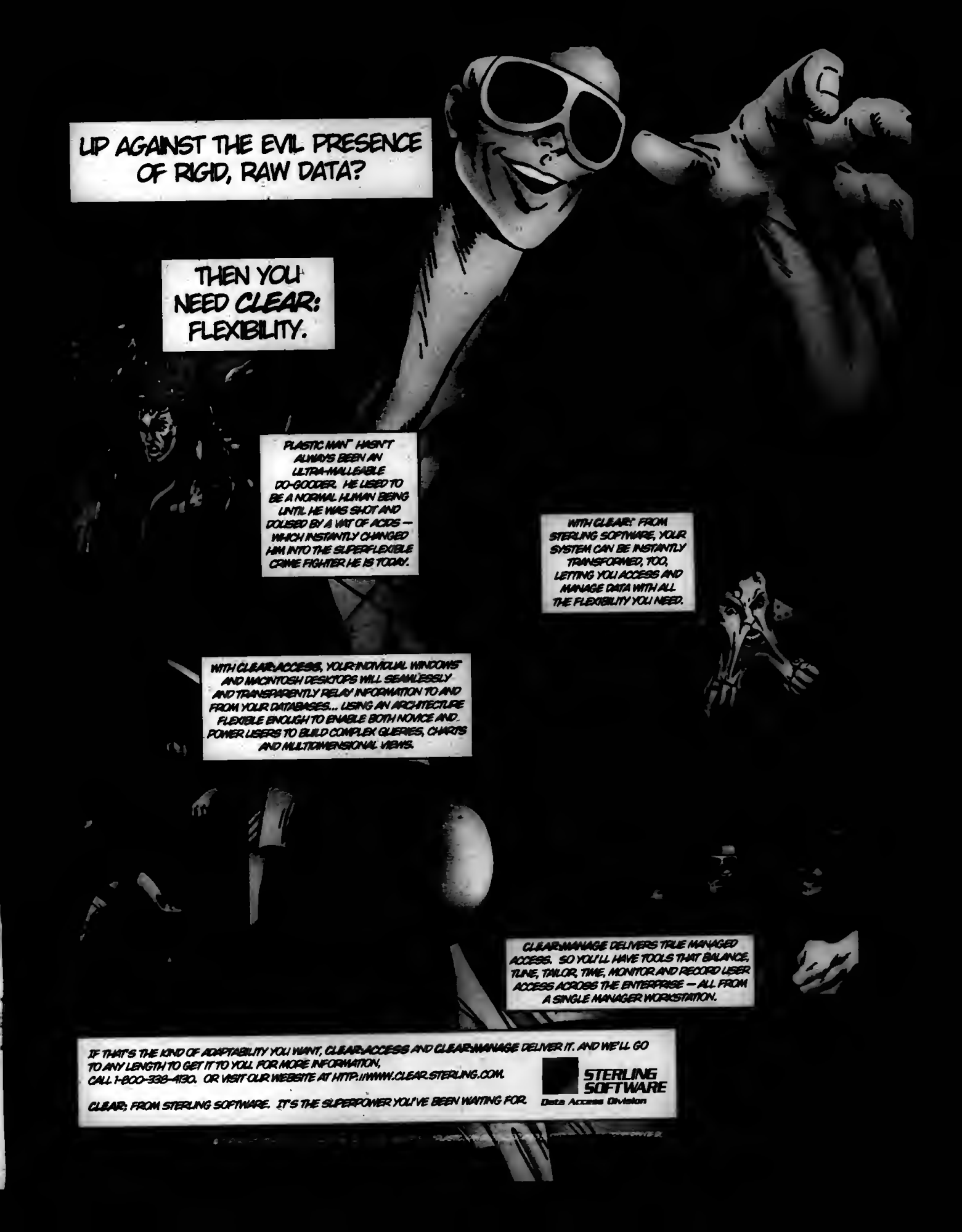
yes It runs with NetWare

All testing performed by LaPlaya Consulting, Inc. Testbed consists of a DX2-66 Intel 486 PC running Windows for Workgroups 3.11 with 16MB memory, SCSI disk controller, 3Com 3C509 Ethernet card linked with 10base2 cabling to a Sun Microsystems SPARCstation 10 running Solaris 2.5 with 32MB memory. Test results are the averages derived from multiple iterations. Each vendor's TCP/IP product was installed using the default configuration. ©1996 TGV Software, Inc. Tel 408-457-5200 Fax 408-457-5205 Email sales@tgv.com Web http://www.tgv.com MultiNet and the TGV logo are registered trademarks or trademarks of TGV Software, Inc. in the United States and certain foreign countries. All other trademarks are the property of their respective owners. Developer tested only. Novell makes no warranty with respect to this product. 060/1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Getting frame relay at cut-rate prices

CONTINUED FROM PAGE 57

rates fall, the user can go back to the vendor and negotiate lower rates in exchange for a higher commitment level.

• **Bundle all traffic.** Be it frame-relay, private line, long-distance, cellular or Internet traffic, put it all in one package. The larger the contract, the more leverage the user has.

The tips offered by Levine and consultants from the Deloitte & Touche Consulting Group struck a chord with CMA members, many of whom commiserated about the mistakes made at their own companies.

One telecommunications manager lamented that his company bought frame-relay service without a request for proposals or even a plan of the network architecture. Many of the more intricate negotiating points raised during the session, such as the difference between basic and enhanced services, were appreciated by David Sherman, telecommunications manager at Liz Claiborne, Inc. in New York.

"Those are things that would have never come to me," he said.

NT Server

CONTINUED FROM PAGE 57

at York Claims Services, Inc., a nationwide claims administrator in New York, encountered glitches when he used Shiva Corp.'s LAN Rover remote access server with Windows NT Server.

"It was a nightmare to set up and configure," Eckstein said. "It was obvious that it was designed with NetWare in mind."

Some very large shops, such as Chevron Information Technology Co. in San Ramon, Calif., said they are taking their time and making sure they have the tools and utilities available before they implement NT Server in a production network, according to Kiran Movva, a base technologist at Chevron.

"The dearth of third-party tools ... does give us pause," Movva said. "We're estimating that it will take us until June or July to put together a LAN administration tool kit that suits our needs."

Users can expect many more third-party applications for Windows NT Server, said Deric Scott, a systems engineer at Information Management Systems, Inc., a systems integrator in Atlanta.

"Given how fast Windows NT Server is ramping up, a lot of third-party vendors will be jumping on the bandwagon and introducing new products," Scott said.

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IF YOU'RE NOT HERE YOU'RE NOT REALLY ONLINE

Briefs

Lotus updates Notes

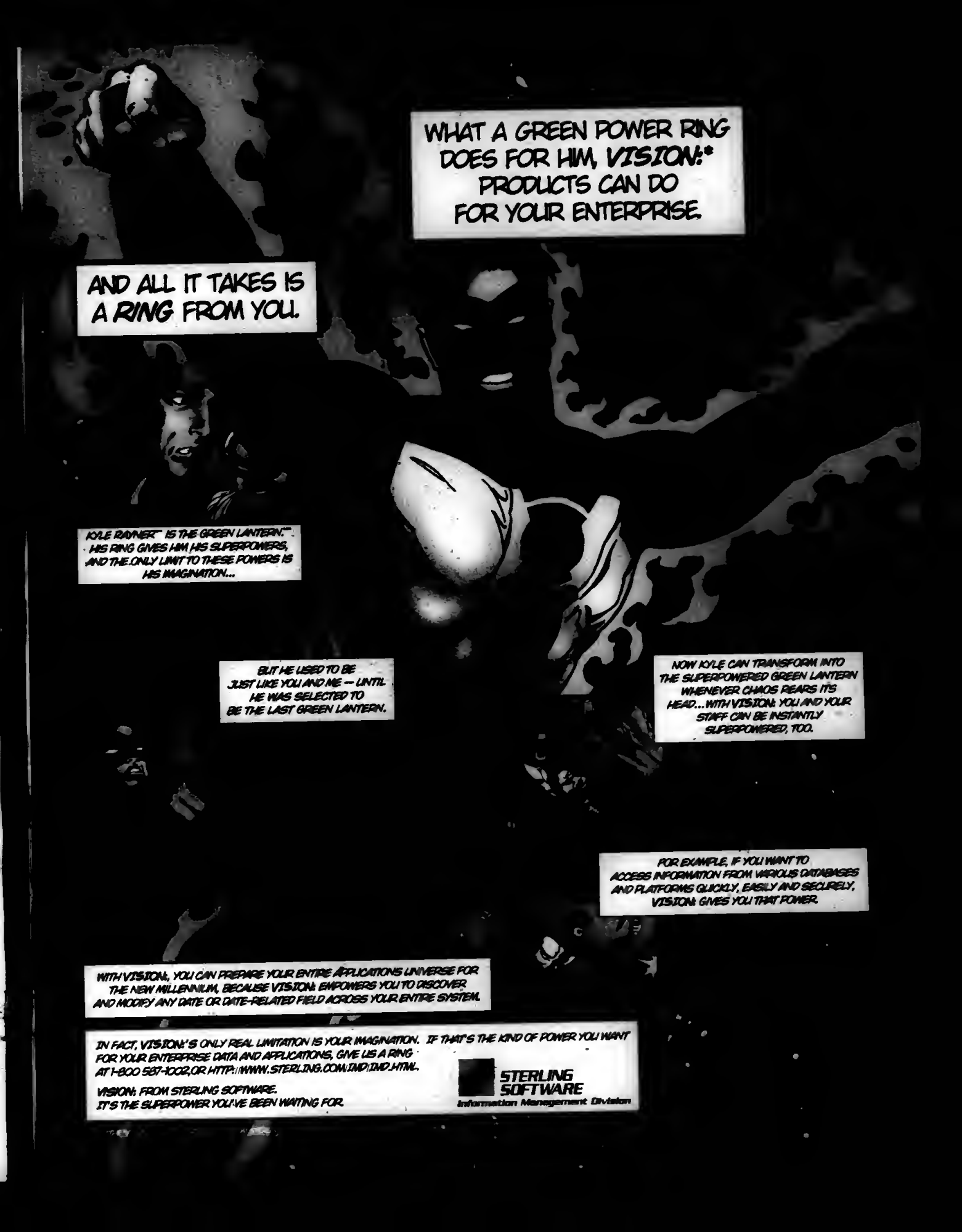
Lotus Development Corp. has sent out Notes 4.01 updates. A more extensive 4.1 maintenance upgrade is due by the end of next month, but Lotus released Version 4.01 to correct minor glitches in the groupware to help users migrating to Notes 4.0

New OS/2 Warp Server

IBM delivered its OS/2 Warp Server last week and said it will deliver a free add-on Directory and Security Services (DSS) component in May or June. The DSS eventually will be made available on Windows NT and several Unix platforms, including AIX, according to John W. Thompson, general manager at IBM's Personal Software Products Division. A symmetrical multiprocessing feature for OS/2 Warp Server will begin beta testing next quarter; final delivery will be in the second half of the year.

Novell signs Tuxedo deal

Novell, Inc. completed the transfer of non-NetWare development and distribution responsibility for its Tuxedo transaction software to BEA Systems, Inc., a start-up in Sunnyvale, Calif. Novell continues to own the Tuxedo source code under the deal, which was signed in January.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Information Management Division

New Products

Computer Knacks, Inc. has announced ScreenSaver 2.0 for Novell, Inc. NetWare, a security-enhanced Windows session manager.

According to the Shrewsbury, N.J., company, ScreenSaver 2.0 lets network administrators define the time-out parameters that automate the shutdown of Windows. It also gives administrators the option of defining a DOS program to be run immediately upon exiting Windows.

The product displays notification of alert messages from running applications, network broadcasts and electronic mail. It also offers two modes of password protection: networked and stand-alone. When users are logged in to a network, they are required to supply their NetWare log-in password to regain access to Windows.

Pricing for ScreenSaver 2.0 starts at $140.

▶ *Computer Knacks*
(908) 530-0262

NovaLink Technologies, Inc. has announced NovaLAN 288 Modem, an Ethernet/modem, simultaneous multifunction PC card.

According to the Fremont, Calif., company, NovaLAN 288 Modem includes bundled Windows-based voice messaging, data and fax features and direct-connect cellular capabilities. It lets users access a corporate LAN from remote locations. The Ethernet LAN adapter uses a combination of burst-mode and memory-sharing technologies to achieve high-speed operation on either 10Base-T or 10Base-2 Ethernet networks. It occupies a single Type II PCMCIA slot.

NovaLAN 288 Modem costs $399.

▶ *NovaLink Technologies*
(510) 249-9777

Micro Computer Systems, Inc. has introduced Inetix Client for Microsoft Corp.'s Windows 95.

According to the Irving, Texas, company, Inetix Client gives Novell, Inc. networks with Windows 95 IPX/SPX clients transparent access to the Internet and World Wide Web without changing protocols.

Novell's NetWare clients who use Inetix Client software have a natural, built-in firewall because IPX/SPX networks don't use Internet Protocol addresses.

Inetix Client is bundled with Inetix Gateway. Pricing starts at $995.

▶ *Micro Computer Systems*
(214) 659-1514

Citrix Systems, Inc. has introduced WinFrame/Access, a Microsoft Corp. Windows NT-based application server.

According to the Coral Springs, Fla., company, WinFrame/Access is an application server for dial-up computing that delivers LAN-based Windows applications to remote users.

WinFrame/Access was designed to eliminate the expense of dedicating a single PC for every dial-up line supported by accommodating 10 or more concurrent users on a single Intel Corp. Pentium processor.

Pricing for WinFrame/Access starts at $2,995 for 10 concurrent users. It offers free, unlimited client software licensing.

▶ *Citrix Systems*
(305) 755-0559

Just SoftWorks, Inc. has unveiled VirusNet, a virus detection and removal program.

According to the Lemont, Ill., company, VirusNet is a comprehensive scanner that features signature, checksum and heuristic scanning. It scans for and eliminates boot scan, polymorphic, Windows macro and unknown viruses. VirusNet can also scan inside compressed files.

The product includes a rescue feature to help recover a user's system from data-threatening situations.

VirusNet costs $59 and includes one year of virus signature updates.

▶ *Just SoftWorks*
(708) 257-7616

Product short

Intrusion Detection, Inc. is shipping Kane Security Analyst for Microsoft Corp. Windows NT networks. It is a network security vulnerability analyzer with a knowledge base of Windows NT security vulnerabilities. Cost: $495 per server. Intrusion Detection, New York, N.Y. (212) 348-8900.

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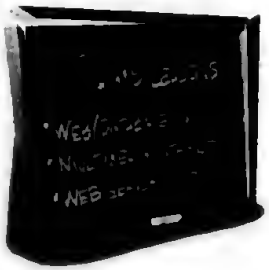
The Internet

Adobe apps will become 'net-friendly; add HTML support, 70



It's academic

College systems often beat corporate IS to the punch

By Kim S. Nash

Sit up straight, spit out your gum, and pay attention. Information systems managers, you can learn a lot about the World Wide Web from your academic counterparts.

Universities face many of the same IS problems that companies do. And right about now, both types of organization are wondering how to best use the Internet to extend their applications.

Intranet puzzles, such as how to connect Web servers and databases or how to add multimedia to networked programs, already have been solved at some universities.

Educational groups often experiment more freely because they typically don't pay as much as companies do for software and hardware.

Some vendors even give away their products, and others offer discounted technical support. And universities have been on the Internet a lot longer than commercial groups.

Faster communication

The University of Ottawa used a free Windows NT-based Web server from Netscape Communications Corp. to create a small intranet.

The system lets biologists share research faster than is possible with the school's "Sneakernet" or electronic-mail system, said Antoine Morin, a webmaster and research biologist at the Ontario university.

In the process, Morin has learned a thing or two about Windows NT Web servers from various vendors.

For example, Microsoft Corp.'s Internet Information Server requires a Windows NT server to administer and monitor the Web applications. But Netscape's NT Web server can be manipulated from any desktop machine with a browser, as long as the administrator has the right access privileges.

IS managers with mainframes can learn a special lesson from the University of West Florida in Pensacola. The school has designed a Web site to answer users' questions about courses offered, enrollment steps and other administrative functions.

Students, faculty and outside Web surfers who click their way through the university's Web site actually are sending queries back to an IBM DB2 database at the Northwest Regional Data Center in Tallahassee, Fla. The center handles the administrative computer work for eight of the 10 colleges in Florida's state university system.

The data center uses Shadow Web Server, a package from Neon Systems, to translate the Web's Hypertext Markup Language to the SQL that the data center's IBM database can understand.

Neon Systems is a start-up company in Sugarland, Texas. Its Shadow Web Server runs on the mainframe.

And users don't have to modify their big iron applications, said Mike Byers, associate director at the data center. "That means zero middleware, which is good because that stuff is a pain to administer," he said. To see the translation in action, go to http://www.uwf.edu.

Audio/visual app

Meanwhile, Harvard University Business School has started to build an Internet application for its students that uses video, audio and images.

Starlight Networks, Inc. in Mountain View, Calif., gave Harvard an early version of its forthcoming add-on module for Netscape's Navigator browser.

Starlight's StarView package lets Navigator users download and play near-real-time video and audio streams. StarView is expected to be available free by the end of the month at http://www.starlight.com.

'Spaffing' the 'net

Purdue professor creates ultimate security resource

By Gary H. Anthes

A recently compiled list of Internet resources for security and law-enforcement professionals includes on-line sites with names such as Counterterrorism, Chemical Weapons, Militia Watch, Cop-Net and Eugene Spafford's Hot List.

Eugene who?

Eugene Spafford's Web site features the latest on security — and yucks

Spafford is a professor of computer science at Purdue University. He specializes in "reliable computing and the consequences of computer failure and misuse." His World Wide Web site might be the starting point for anyone who seeks the latest developments in computer security.

The site offers more than just a list. It contains Web links to information about cryptography, privacy, computer viruses, computing ethics, network security and dozens of related topics. It has links to government and law-enforcement sites, professional organizations, research centers, journals and mailing lists, glossaries and frequently asked questions, security archives and much more.

"Gene Spafford's sites are exceptionally complete and well-organized," according to *The Computer Underground Digest*. "They're the cyber-equivalent of the Smithsonian; you can browse them for weeks and still want more."

Fun stuff

But not all is grim security talk at Spafford's Web site, http:www.cs.purdue.edu/people/spaf. He also offers up his own "Yucks Digest," a "moderated list of the bizarre, the unusual, the possibly insane and the (usually) humorous."

For example, the Christmas issue of "Yucks" contained a posting from someone asking, "How come you never hear anything about the 10th reindeer, Olive? You know, 'Olive, the other reindeer, used to laugh and call him names.'"

Spafford's home page also offers access to the results of several research projects in information security, including the Computer Operations, Audit and Security Technology (COAST) projects, which he directs.

"Our short-term research is directed to increasing the security of existing systems without severely impacting their usability," Spafford said.

COAST is conducting research in areas such as system integrity monitoring, virus protection, intrusion detection and change management. A project called Intrusion Detection In Our Time uses complex pattern-matching techniques to detect the signatures left behind during system misuse.

The COAST Web site gets about 5,000 hits per day, Spafford said.

There is a special section at Spafford's Web site in which he collects cool quotes. One seems to summarize the life of a computer security professional: "Do not try to solve all life's problems at once; learn to dread each day as it comes."

http:

Computer security

Safe sex and secure computer systems: Some say neither is completely possible. But corporate data can be safer, if information systems managers take proper precautions. There are several World Wide Web sites that offer such help.

■ The Computer Security Institute has posted a recent Internet security survey at http://nii.nist/journal/csi-survey95.html. The nonprofit group queried 320 computer professionals about policies, plans and implementations. For example, 34% of the respondents said they don't use an Internet firewall. Find out how you stack up.

■ Internet Security Systems, Inc., a software maker and consultancy in Atlanta, maintains several frequently asked questions (FAQ) files. To access FAQ files about various security topics, go to http://www.iss.net/iss/faq.html. You can also subscribe to security-related mailing lists at http://www.iss.net/maillis.html.

■ A section of the Yahoo search site is devoted to the Web sites of consulting companies that specialize in computer security at http://www.yahoo.com/Business_and_Economy/Companies/Security/Consulting.

■ Free stuff is always a good thing, and the National Computer Security Association offers just that. For example, users who complete a registration form at the group's Web site can receive "The Firewall Guide." The manual advises IS managers about setting firewall and security policies. Also free is "The Catalog," a guide to journals, books and other material related to security. Check out http://www.ncsa.com/.

— *Kim S. Nash*

Oracle's WebServer pace intrigues, confuses users

By Dan Richman
SAN FRANCISCO

An Oracle Corp. executive revealed details about Version 3.0 of the company's WebServer at the company's developers' conference held here recently.

Version 2.0 of the Internet server isn't due to ship until the end of March, but in the Internet industry things move so fast, "we're starting to measure product cycles in 'Web years,' where one Web year lasts about two months," said Milton Howard, a senior marketing manager at Oracle.

Version 3.0 will ship by early fall.

WebServer 3.0 will allow the use of any vendor's Hypertext Transport Protocol (HTTP) listener, a piece of software that responds to user requests. Version 2.0 can use only Oracle's HTTP listener.

The new version will contain a Web Object Framework, based on the Object Management Group's Common Object Request Broker Architecture (CORBA).

The framework will let users build complex applications out of reusable components.

Open for browsing

Oracle's WebBrowser 3.0 has the following new features:
- It uses any vendor's HTTP listener, not just Oracle's listener.
- It gives Java applications direct access to Oracle data.
- It is based on CORBA, which allows for the reuse of application components.

Stephen Roche, a principal at Forte Systems, Inc., a systems integrator in West Chester, Pa., said his company uses Version 1.0 but will move to Version 2.0 as soon as it ships.

Roche said Forte is intrigued but frustrated by Version 3.0.

"The new features sound great, and we'd like to learn more, but things are moving so fast that we've been having trouble reaching anyone at Oracle who really knows this product yet," Roche said.

One analyst said Roche's comment typifies what he is hearing from Internet server users.

"Oracle and the other vendors tend to be way in front of what users are doing today," said Mark Hanner, an analyst at Meta Group, Inc. in Burlingame, Calif.

"The new features in WebServer 3.0 are fine, but users mainly just want to keep a simple World Wide Web site manageable. Oracle and the others still don't have the administrative tools users need," he said.

Marketing ploy

Hanner said Oracle's use of the "3.0" designation probably is arbitrary. The number denotes a marketing scheme more than the new technology that an upgraded release number sometimes indicates.

WebServer 3.0 will allow applications that are created with the Java programming language to directly access Oracle data through a new interface called Java Open Database Connectivity.

Oracle is working with Sun Microsystems, Inc.'s Java division to develop this interface, Howard said.

Currently, Java applications must access Oracle data through calls to routines written in Oracle's PL/SQL dialect of SQL, which imposes a performance penalty.

WebServer 3.0 will cost $2,495.

Page Call software puts Web site visitors, administrators in touch

By Mitch Wagner

Edify Corp.'s new Page Call software gives World Wide Web site operators instant telephone contact with visitors.

Site visitors click on a "Call Me" button and Page Call software automatically dials the visitor's telephone number. The visitor can supply the phone number when clicking on the "Call Me" button or when registering at the site.

The site visitor then is connected to a company representative.

Page Call was designed for sales, customer support, customer service or other areas where people want to talk to human beings, said Roger Lee, manager of Internet products at Edify in Santa Clara, Calif.

Staying grounded

Though The Boeing Co. sells souvenir coffee cups and hats at its Internet site, that's about where they draw the line for online sales, said Lee Lathrop, who oversees the company's Web site. "We don't expect to sell a lot of planes on-line," he said, chuckling. "But we have had E-mail inquiries from some people looking to arrange rentals."

Better communication

Lee Lathrop, a corporate manager for internal communications at The Boeing Co. in Seattle, said a product such as Page Call could benefit businesses that use the Internet to interact with customers.

Boeing is experimenting with ways to use the Internet for support and training. "We're always looking for faster, easier and cheaper means of communicating," he said.

The software also offers features that allow a company representative to pull up company files about a Web site visitor while they talk. The software also can track which pages on a Web site the user visits and can keep those pages in view for the company representative on the other side of the call.

Page Call is available immediately and runs with any standard Web server. It supports databases from Oracle Corp., Sybase, Inc. and Computer Associates International, Inc.'s Ingres.

It interacts with data that runs on legacy hosts, including mainframes, Unix and Digital Equipment Corp. VAX/VMS servers. Page Call runs on OS/2 servers. Edify officials said the company will port the software to other platforms but declined to provide details. Pricing starts at $40,000.

Adobe apps will become 'net-friendly

Products include HTML support

By Lisa Picarille

Adobe Systems, Inc. plans to inject Internet features into its entire applications arsenal.

Adobe also plans to support Java, Sun Microsystems, Inc.'s development language, in its family of authoring, publishing and illustration software.

The announcements are key pieces of Adobe's plan to leverage its leadership position in desktop publishing in an increasingly online world, according to officials at the Mountain View, Calif., company.

"Adobe is the most important electronic publishing vendor out there," said Jeffrey Tarter, editor of "Softletter," an industry newsletter.

Three's the charm

Adobe is the third-largest software maker. The company posted worldwide revenue of more than $762 million last year.

The vendor is "way ahead" in its Internet strategy and implementation, Tarter said.

Adobe's product line includes PostScript, a printer description language; Acrobat, electronic document exchange software that can distribute documents across a network without changing their original format; PageMaker, page layout and desktop publishing software; Photoshop digital imaging products; and illustration and type applications.

Conversions made easy

As early as this summer, Adobe officials said, Acrobat users should be able to create and distribute documents that support Java applets and other plug-in modules, such as a Netscape Communications Corp.'s Navigator browser.

Adobe also is expected to deliver in the second quarter a new version of its PostScript printer description language that will support Hypertext Markup Language

(HTML). HTML is the de facto standard for formatting documents on the Internet.

This means users will be able to convert their PostScript documents to HTML and put those documents on the World Wide Web.

Users also will be able to embed Java applets in PostScript files; this file format will be called Embedded PDF. With this feature, users will be able to view and browse embedded PDF files without having to exit Acrobat.

Adobe plans to simplify the method for converting graphics interchange format (GIF) files, which are supported across its entire product line, to HTML.

The company is developing its own plug-in applet that will let users view GIF files from within their browsers.

Adobe also is developing an HTML-optimized version of PostScript that will make it easier for users to locally or remotely print complex, multipage documents on PostScript printers.

One user said the new Internet features will make it easier to create graphics and images that can be sent across the network.

Users won't have to worry about which file format was used to create the images or "what file format the people on the other end need," said George Rorick, director of graphics services at the Knight-Ridder/Tribune Graphics Network in Washington.

The news organization distributes graphics and animation daily to other news services throughout the world.

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- OpenVMS
- OS/2
- Unix
- Windows NT
- Windows 95†
- With more in development.

† available 2Q 96

BMC SOFTWARE

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New Products

Level Five Research has unveiled Quest Server, a family of server products for World Wide Web site developers.

According to the Melbourne, Fla., company, Quest Server lets Web site developers use and publish searchable databases. It has fuzzy and concept-based database search tools and ranking technology, which lets users conduct proximity searches and preference ranking.

The product lets users mine for information by using their favorite Web browsing tools.

Quest Server works with all SQL database management system data sources and Web Hypertext Transport Protocol servers. The product uses a Hypertext Markup Language anchor to launch projects.

Pricing for Quest Server starts at $1,495.

▶ *Level Five Research*
(407) 729-6004

Integral Results, Inc. has introduced Iresults DataWeb 2.0, an Internet development tool.

According to the San Francisco company, Iresults DataWeb 2.0 automatically connects databases to the World Wide Web. Web administrators can access database information by using Iresults DataWeb 2.0 as a bridge between a Web page and a back-end database.

Databases can be integrated with Web pages by adding a few lines to Hypertext Markup Language files. This integration lets Web pages prompt the user for search criteria.

Iresults DataWeb 2.0 costs $225. Trial samples are available at http://www.iresults.com.

▶ *Integral Results*
(415) 541-8593

MicroTouch Systems, Inc. has introduced Prospector, a World Wide Web browsing product.

Prospector was designed to help businesses showcase their Web sites through MicroTouch's WebStation kiosks. It was designed to help companies set up a promotional touch-screen WebStation, which comprises a touch monitor, PC and Internet connection. According to the Methuen, Mass., company, Prospector features SurfControl, a tool that confines users to specific Web sites. SurfControl focuses attention on the selected screens. It also can sever linked connections to other sites.

Prospector works with Windows 95. It requires 8M bytes of memory and costs $595.

▶ *MicroTouch Systems*
(508) 659-9000

Dagar Software Corp. has introduced Timeout, a Windows-based utility for online users.

According to the Bethany, Conn., company, Timeout monitors idle time when a user is connected to any fee-for-time service — including America Online, CompuServe, Prodigy or Dow Jones — and disconnects the user when a preselected limit is reached.

Timeout gives users two screen and tone warnings before disconnecting the line.

Timeout was designed to run in the background. The product is compatible with Windows 3.x and Windows 95.

It costs $30.

▶ *Dagar Software*
(203) 393-2000

Product short

CompassWare Development, Inc. has introduced CompassSearch Web Server, a search and retrieval engine for World Wide Web publishers. It was designed to give natural language and concept-based search capabilities to content-driven Web sites. Pricing starts at $4,999. CompassWare Development, New York, (212) 685-4220.

Bill Gates has been coming to our conference since 1989.

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You need remote access that won't
keep your users hanging.

You need dial-up solutions that deliver the full power of the enterprise.

Today's business pressures are different than those of just a few years ago. The demands of providing your employees global network access, increased customer support services, and timely, dependable information anytime, anywhere, are driving enterprise resources out to remote locations. But it can't happen without the right remote access infrastructure, both at the enterprise and at remote locations.

Successful remote access means being able to connect more and more telecommuters and mobile workers to the Internet and enterprise networks from practically any location, almost transparently, as if they were in offices at headquarters. These telecommuters and mobile users need remote e-mail, fax, terminal emulation, groupware, World Wide Web services, and soon, videoconferencing capabilities.

All of this requires equipment, network management security, software, and training. And the first question is how to protect your already-substantial technology investment. Clearly, new incompatible products from a myriad of vendors is not the answer. You want remote access solutions that work right from the beginning. You want them to work with the equipment you already have. And you want them to be scalable for the future.

There is a way, right now. And the results are worth it. Research shows that remote access to enterprise data directly contributes to revenues, customer satisfaction, company productivity, and individual effectiveness, satisfying many of the competitive pressures of today's business environment. That's why commitment to remote access is predicted to grow six-fold from $720 million in 1994 to $4.4 billion in 1998. And there's a reason why Cisco Systems currently owns 51 percent of the remote LAN access market.*

Cisco has the solution.

Now, the hardware, network management, software, and training you need can be built compatibly around your existing network, strengthening it, not sacrificing it. With Cisco's end-to-end remote access solutions, you can protect your investments in routing, switching, modem technology, and people. Cisco has the complete solution from beginning to end, from the latest mobile user and telecommuter software and personal routers to enterprise LAN/WAN equipment, and from the powerful Cisco Internetwork Operating System (Cisco IOS™) software to central-site management software. We can deliver compatible, scalable products with a future that compliment your existing investment and satisfy your remote access needs at each stage of growth. Now, you have a wide range of interoperable hardware and software options to build a complete solution.

One supplier, one network.

You already know us as the ten-year leader in router and internetworking environments, traditionally specializing in large, multi-protocol networks.

We pioneered the first wave of internetworking by introducing multi-protocol router technologies that provide network communications throughout buildings and campuses as well as across large WANs. Then we introduced the second wave of internetworking through the introduction of small leased-line routers that extend the enterprise to smaller individual LANs in branch offices. Cisco offers more products supporting the first two waves of internetworking than any other vendor. In fact, over 80 percent of the entire Internet worldwide is based on Cisco routers.

Now we're building the third wave of internetworking, extending the enterprise out to dial-up users for anytime/anywhere access. It started with our first single-user access servers, the Cisco 2509-12, and remote branch dial up routers like the Cisco 2503 and 2504. Then we introduced products like CiscoRemote, the complete software solution for telecommuters and mobile users; the Cisco 200 Personal Office for ISDN; the Cisco 750 and Cisco 1000 low-cost, high-speed ISDN routers. Our Universal Access Server, the Cisco AS5200 and the integrated AS5100, and Cisco 4000 and Cisco 7000 Series for ISDN concentration, and many new products, make this offering the most complete solution for remote access, turning the third wave into a practical reality.

* Market share data supplied by the Aberdeen Group and Infonetics Research, Inc.

Cisco Dial-Up Access: The Natural Anytime/Anywhere Extension of Your Enterprise Resources.

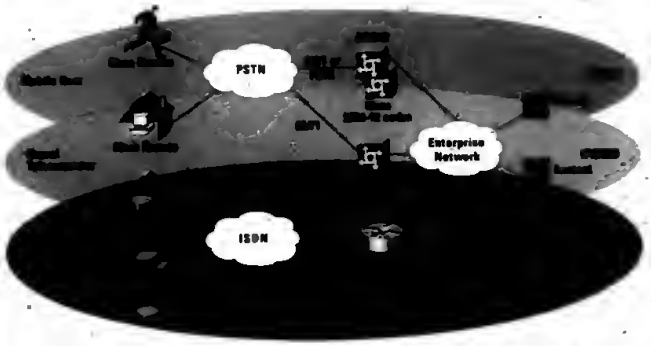
Dial-up is a specific activity of remote access that connects home-based or small remote office telecommuters and mobile users io the field to enterprise networks. Their numbers are growing quickly, and their requirements call for both asynchronous and ISDN connections to your enterprise resources. But that's all right—Cisco has every combination of options you need.

For example, first let's look at mobile users. They're constantly on the go from airport to hotel to customer location and back home for a day, and they rely on convenient POTS (plain old telephone service) connection capabilities—the only connection service available virtually everywhere. They access the Internet and enterprise resources primarily for mainframe database information, customer order tracking and pricing, scheduling, e-mail, file transfer, and occasional software downloads. You can give them the dial-up connectivity they need with Cisco's integrated, easy-to-use remote access software, tamper-proof security, and reliable, high-performance access servers at the enterprise end.

Second are casual telecommuters. They are the office-based users who take work home to finish at their leisure, or who must work on-line while on the road. These users need dial-up access for all of their regular office computing tasks without iovesting a lot of time solving connectivity obstacles. For many casual telecommuters, the universally available, simple connections of modem-based asynchronous dial-up is preferred. Power users with multi-media desktop computers have higher bandwidth and quicker connect time needs, provided by ISDN.

Third, let's look at home-based, dedicated telecommuters. These users are increasingly dependent on the communications link to the enterprise. And that means they want the advantages of the new digital services afforded by ISDN. This transmission medium provides stable, quick-dial, high-bandwidth transmission for voice, data, and

	Situation	Need	Advantage
Mobile Users	Constantly changing work environment	Universal connectivity	Complete mobility Customer contact
Casual Telecommuters	Temporary home connection	Simple, low-cost connectivity	Compatibility Work-at-home convenience
Dedicated Telecommuters	Semi-permanent home connection	High-bandwidth transparent connectivity	Higher productivity Reduced overhead



video. It delivers high-speed Internet connectivity to business applications. ISDN can turn a home computer into a productive, highly capable computing center, and it is one of the primary enabling technologies of telecommuting. In addition, users from all three categories will want Internet connectivity for communications, digital commerce, and information-gathering.

Asynchronous and ISDN, however, are environments that require somewhat different equipment configurations, both at user locations and at the enterprise. And that has traditionally made them separate management, maintenance, and investment propositions, usually at the expense of depriving telecommuters of ISDN.

A hybrid mix of both asynchronous and ISDN access to the enterprise is the current reality faced by every major corporation worldwide. Hybrid enterprise access is the best way to accommodate the needs of all telecommuters and mobile users. And until now, the question has been how to install and support both, extending the multi-protocol enterprise out to dial-up users for anytime /anywhere access, and do it cost-effectively. With Cisco, the question is answered.

The products described here are a complete end-to-end solution for any mix of hybrid or separate dial-up connections for your users. Many of them are unique in their capabilities, and several have won some of the industry's most prestigious awards, including Data Communication's Product of the Year for the Cisco 750 Series and PC Magazine's Editors' Choice for the Cisco 752. Further, they're based on the Cisco IOS software, the de facto standard in internetworking. Cisco IOS software is the unifying thread of otherwise disparate networks. It brings the value-added benefits of proven, reliable adaptive routing, WAN optimization, scalability, and management to enterprise networks. It also solves today's number one issue of network managers, be they large or small: security. Cisco IOS software, CiscoSecure, and all of the rest of these solution choices can help you build your remote access network as a hybrid system from scratch. Or you can compatibly add ISDN capabilities by *building on* your existing network. Now, the choice is yours.

Cisco's new generation of remote access solutions for both asynchronous and ISDN offer end-to-end product compatibility and interoperability with your existing Cisco network infrastructure. With one supplier providing the internetworking operating system, application and multi-protocol software, hardware, and services for one enterprise network, you gain a big advantage: end-to-end, seamless networking technology, from the enterprise backbone through remote site leased-line routers and out to individual mobile users and telecommuters.

"At EDS we see a clear need for the kind of dial-up solution that Cisco's Universal Access Servers will provide. These and other similar servers will help us meet our increasing need for multiple types of remote access for our customers and remote workers."

-Mike Dews
Senior Software
Systems Engineer
EDS

It's a solution that is guaranteed to excite the third wave of interoperability, remote freedom and productivity, and global competitive activity.

Introducing the Products that Deliver the Millennium Ahead of Schedule.

"A good package is one that you install, make a connection, and log into the Internet first time.

Cisco Universal Access Server 5200

Accommodate Asynchronnus and ISDN Lines with One Standalone Central Site Server.

The AS5200 delivers both asynchronous and ISDN service for IP, IPX, and ARA protocols and is specifically designed to handle both mobile users and telecommuters. These highly scalable universal access servers run Cisco IOS software and function as channel service units/data service units (CSU/DSU), channel banks, communication servers, routers, and modems tightly integrated into one standalone chassis. The AS5200's modular architecture allows you to build your dial-up infrastructure with a choice of modems from several functional options and vendors, including fully managed modems from Microcom and U.S. Robotics.

The AS5200's high degree of component integration in one chassis also eliminates the incompatibility problems that are common with multi-box, multi-vendor installations and increases the overall system reliability. All of its multiple components — CSU/DSU, router, access server, and modems—are supported by Cisco's world-class 7x24 global support team.

The AS5200's mixed-media flexibility lets you simplify the transition to ISDN service, consolidate management and maintenance, and optimize support for all of your dial-up users.

Benefits

- Offers users an extremely scalable solution appropriate even for smaller organizations
- Provides a simple, cost-efficient migration path from today's predominantly analog dial-up environment to the fast-growing ISDN digital services that telecommuters prefer
- Provides a single-unit money and space savings, increased reliability, and simplified management through integrated dial-up and routing functionality
- Extends the Cisco IOS software software security architecture to the dial-in point of contact
- Offers unprecedented scalability through multi-chassis, multilink PPP
- Ensures sophisticated, integrated management that allows data gathering, analysis, and configuration

Features

- Services and terminates asynchronous (POTS) and digital (ISDN) calls with one platform and phone number
- Accommodates two PRI/T1 or PRI/E1 lines using its integrated CSUs

That's what happened with CiscoRemote this morning."

-Nathan Sowatskey
Project Manager Software Systems SAIX
(South African Internet Exchange)

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If end user, I am a: Mobile User [ ] Telecommuter [ ] Home Office/Small Office [ ] Branch Office [ ] Other _____

What is your job function: President/Owner/Vice President [ ] CIO [ ] Network/MIS Director/Manager [ ]

Systems Analyst/Network Engineer/Network Analyst [ ] Marketing/Sales [ ]

Other Administration (Buyer/Purchasing Agent) [ ]

Do you have a networking project planned (i.e. time frame to purchase)?

0 - 3 months [ ] 4 - 6 months [ ] 7 - 12 months [ ] 12 + months [ ] Nothing Planned [ ]

I am interested in a Dial-Up Seminar: Yes [ ] No [ ]

Would you like a Cisco representative to call you? Yes[ ]

- One Ethernet port routes data locally
- Two synchronous serial ports to back-haul data to other sites
- Contains up to 48/60 modems provided by a selection of leading vendors with a choice of feature options
- Full Cisco IOS software software support, including router functionality

Applications
Mixed-media analog and digital enterprise connectivity for mobile and home-based users.

Cisco Universal Access Server 5100

High-Performance, High-Reliability Enterprise Access.

The popular AS5100 access server is a versatile, tightly integrated device that provides asynchronous dial-up access to enterprise networks for remote individual users or remote LANs. Similar to the AS5200, the AS5100 is an integrated modem access server. However, the AS5100 is optimized for asynchronous access.(IP, IPX, ARA), while the AS5200 provides mixed asynchronous and ISDN dial-up.

Benefit
- Uses U.S. Robotics core competency in modem technology in conjunction with proven Cisco Access Server functionality

Features
- Hot-swappable modem cards that maximize uptime
- Cisco IOS software software support and sophisticated modem management

Cisco Access Sever 2500 Series

Complete Connectivity Solutions for Remote Offices.

Cisco 2509, 2510, 2511, and 2512 series of access servers are midrange platforms that provide one Ethernet or Token Ring interface with two serial and 8 or 16 asynchronous interfaces. Their interface flexibility and port density offer a cost-effective way to connect to enterprise resources with external modems.

Benefits
- Cost-efficient enterprise network access for remote users
- Flexible interface options
- RS-232 ports for connection to existing modem pools

Features
- Routing and remote node support for IP, IPX, AT and more
- Support for all popular WAN services such as leased lines, frame relay, ISDN, X.25, and SMDS at 115Kbps per port

CiscoSecure Server

Centralized Dial-up Network Security.

CiscoSecure is our security server software application. It lets a network administrator centrally control access to a private network and its routers to secure an enterprise network for dial-up access as well as router management. Centralized control simplifies management and helps ensure simple, safe, and consistent administration of remote access policies. CiscoSecure can also give Internet service providers billing, authentication, and access author-ization for geographically distributed subscribers.

CiscoSecure is the server portion of a distributed client/server security solution for use on a Unix workstation. It utilizes the advanced TACACS+ client/server security protocol while Cisco IOS software software gives you added support for the RADIUS security protocol, giving users both in one integrated system.

TACACS+ uses Transmission Control Protocol (TCP) transport for reliable packet delivery and offers fully secure packets for communications between dial-up access servers and CiscoSecure. Not only are passwords secured, but all transactions, including user name, authorization level, and usage are encrypted.

With CiscoSecure, a network administrator can centrally control access to a private network and its routers through its GUI interface by creating a database that defines specific user privileges. Network access security provides control over three sets of parameters: authentication, authorization, and accounting, referred to as AAA. CiscoSecure's flexible and scalable central database manages user and group authentication and authorization profiles (TACACS+).

Benefits

- Simplifies and centralizes security for large dial-up access pools
- Delivers advanced TACACS+ security protection
- Provides authentication, authorization, and accounting
- Provides a central point for management of and allocation from IP address pool

Features

- Provides TACACS+ client/server security protocol with TCP transport for reliable delivery of MD5 encrypted packets
- Encrypts all transactions, including username, password, authorization level, and activity
- Complete AAA functionality: authentication, authorization, and accounting
- GUI interface simplifies and speeds user and group profile set-up
- Full packet encryption for all traffic between the access server and CiscoSecure
- Password support that offers: Cleartext, DES, S/Key, /etc/passwd file, CHAP, PAP, and ARAP
- Multiple challenge responses

"It's clear that Cisco's technology roadmap is embracing the wave of the future with the introduction of the AS5200 as its first release in a new line of Universal Access Servers. This is just the kind of technology we need to serve our customers' rapidly diversifying needs for remote access."

-Mike Duckett
Manager of Network Engineering
BellSouth Applied Technologies

- Password changes by either the user or security manager
- Automatic refusal of easily guessed passwords
- Logged violations of multiple usr/passwd occurrences
- Programmable password aging with early warning messaging
- Time-of-day and day-of-week access permission for block-out periods
- Explicit start and end account dates
- Authorization services through EXEC, PPP (IP, IPX), SLIP, and ARAP

Applications

CiscoSecure gives network managers the features required to secure and manage remote access of enterprise systems by dial-up users.

CiscoRemote Plus and Lite

The Only All-in-One Remote Access Software Solution.

CiscoRemote is a series of two remote access software offerings. The first, CiscoRemote Plus, integrates all of the "best-in-class" access utilities that users need for remote computing on one CD-ROM under a single Cisco support plan. This complete software solution gives users applications and utilities that are optimized and guaranteed for Cisco remote access hardware. Purchased separately, these applications would cost over eight times more, with no assurance of interoperability.

The second, CiscoRemote Lite, provides basic remote-node connectivity "out of the box" and is available at no charge with the purchase of a Cisco access server.

Features

CiscoRemote	Lite	Plus
Windows 3.1, Windows for Workgroups, Windows 95	•	•
Windows Installer, Dialer, Modem Discovery Program	•	•
TCP/IP VxD Stack Optimized Connectivity	•	•
PPP and SLIP	•	•
ISDN support with autoswitcher	•	•
Asynchronous analog modem support	•	•
Telnet, FTP, TFTP, Ping	•	•
IP/IPX		•
Powerburst Remote Node Accelerator		•
Netscape Navigator 2.0 Web browser		•
Collaborative Computing Document Conferencing by DataBeam		•
Eudora E-mail		•
Timbuktu Pro Remote Control		•

Benefits:

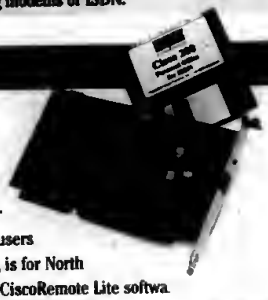
- Saves time and money as a complete bundled and tested remote computing solution
- Simplifies installation and integration of multiple remote access applications
- Speeds information retrieval and reduces connection time

- Eliminates multiple service organizations through one support call
- Optimizes connections with Cisco access servers for best performance

Applications

CiscoRemote is designed for users who need high-performance access applications for telecommuting or mobile computing over dial-up phone lines via either asynchronous analog modems or ISDN.

Cisco 200 Family



The All Inclusive Single-User ISDN Adapter.

The Cisco 200 products give users economical remote access to enterprise networks and the Internet over ISDN lines. All product models combine an Open Data-Link Interface (ODI) workstation driver (supporting IPX and TCP/IP protocols) with an ISDN adapter in a complete, economical package. The Cisco 201 is designed for users outside North America, and the Cisco 202, with an integrated NT1, is for North American users. The Cisco 203 and 204 versions include a copy of CiscoRemote Lite softwa for a single unit, all-inclusive remote user package. The Cisco 200 series is ideal for telecommuters working from home or remote offices. It provides transparent access to enterprise resources, such as host computers, printers, e-mail, databases, and technical support. Il is also a perfect solulion for remote or headquarters-based users connecting a single desktop PC to the Internet using a high-speed ISDN connection.

Benefits

- Provides 56 kbps and 64 kbps transmission rates for cost and time savings
- Delivers up to 128 kbps of throughput via multilink Point-to-Point (PPP) protocol
- Provides access to the widest range of Internet vendors and services
- Full-strength ISDN at home significantly reduces connection time compared to analog phone lines
- Presents a complete solution in one easy-to-install product
- Offers lowest-cost entry point into the Cisco Access product family

Features

- Easily installed by non-technical users
- Transparent Dial-on-Demand when connected to a Cisco router—users pay for the ISDN connection only when data is being transmitted
- Dynamic bandwidth-on-demand optimization—multilink PPP ensures efficient use of WAN bandwidth, expanding from one to two B channels transparently as specified by the user
- CiscoRemote software support provides all the protocol software necessary for dial-up and ISDN access to corporate networks and Internet services from a Windows PC, including TCP/IP, Netscape Navigator, Remote Node Accelerator, and IP applications integrated and optimized on one CD-ROM

Applications

Cisco 200 ISDN adapters are designed for telecommuters or individuals in remote offices who need access to the Internet and enterprise network resources via a Windows PC.

Cisco 750 Series ISDN Routers

Designed for Dedicated Telecommuters.

While the complementary Cisco 1000 series is designed for small branch office connectivity, the Cisco 750 series is tailored specifically for telecommuters that need IP and IPX routing over ISDN.

Benefits

- Cisco-designed for ease of operation—Personal Network Profiles makes connecting and disconnecting multiple sites easy
- With IP and IPX routing, the Cisco 750 series supports most popular enterprise LAN protocols
- Support for major connection types means easy integration into your networking environments
- Dial-on-Demand routing and 4:1 data compression provide efficient use of WAN connections and lower connection costs
- Included Cisco ConnectPro software for Windows is an intuitive tool for installing, configuring, and monitoring your router
- Lowest-cost, standalone router offered by Cisco

Features

- Dial-on-Demand Routing for IP and IPX protocols
- Multilink Point-to-Point Protocol (PPP) for up to 128 kbps of ISDN bandwidth
- Simple Network Management Protocol (SNMP) management and multilevel authentication
- Packaged with Cisco ConnectPro, a Windows-based application for installing, configuring, and managing your router
- The Cisco 751 is for international users who require an external NT1 device
- The Cisco 753 provides an optional integrated NT1 telephone interface for North American usage without an external NT1 device and includes an external S/T port to support additional ISDN devices, such as ISDN telephones
- The Cisco 753 includes integrated NT1, an external analog telephone interface, and Cisco's call priority feature that can drop one data channel to accept or initiate a voice call if both B channels are being used for data

DataComm MAX HOT PRODUCTS JANUARY 1996

Applications

The Cisco 750 series provides dedicated telecommuters with transparent access to enterprise networks while dramatically lowering the initial and recurring costs associated with telecommuting programs.

Take the First Step into the Third Wave of Internetworking.

Cisco's complete end-to-end solution truly extends the enterprise to mobile users and telecommuters with full support for both the user and the network manager. The power of Cisco IOS software software is a secure, seamless thread that connects the considerable benefits of dial-up access to your existing resources while maximizing your investment. Award-winning products that solve compatibility problems, provide asynchronous and ISDN dial-up, and anticipate future technologies reside at both ends and are managed centrally. Cisco-optimized software from the leading vendors in Internet access and dial-up productivity supplies your users with a single, consistent, one-vendor support package. And comprehensive security software that supports the top two security protocols authenticates, authorizes, and accounts for every bit of data.

It took one supplier to accomplish this: Cisco.

We combined our experience and expertise to make universal, multi-protocol dial-up approachable, affordable, and interoperable with your existing equipment, extending the enterprise wherever you need its resources. And we're ready to help you move into the new third wave of networking safely and simply, right now.

Trade In and Trade Up Today—It's the Best Way to Get Started.

Cisco is currently offering a trade-in offer for your access or terminal server equipment when you upgrade to any of our complete line of access servers. It's an attractive discount to get you started, but it's also a time-limited offer with specific conditions, so please read the attached offer for details. And start deciding how far and wide you want to extend your enterprise.

Get More Information Now.

For more information on Cisco's access solutions, call 1-800-553-NETS (6387), contact your local sales office, or visit the Cisco web site at http://www.cisco.com.

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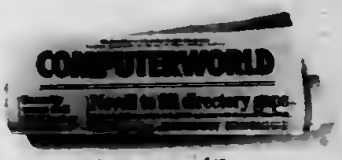

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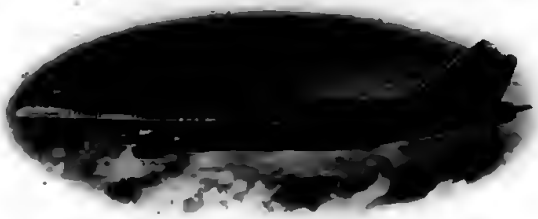
The Information Management Company

Dow Chemical is moving 10,000 end users from SAP's mainframe-based R/2 to the popular client/server R/3, 78

Corporate Strategies

United flies to OpenMail

By Tim Ouellette



United Airlines finally has its internal electronic-mail messaging system running smoothly and on time.

The Elk Grove, Ill., airline's internal E-mail network was a traffic controller's nightmare — a hodgepodge of Microsoft Corp. Mail post offices built up over time without any central administration. It was plagued by messages that at times never reached their destinations.

"The users began doing this themselves, with no corporate plan in mind. Our mail architecture grew uncontrollably for about 18 months," said Greg Barrons, United's infrastructure project manager.

To regain control of the 65 Microsoft Mail post offices companywide, United looked into software that could provide a secure messaging backbone and simplify migration for the users. The airline ended up choosing, and is now installing, OpenMail, a client/server messaging backbone from Hewlett-Packard Co. that runs on a Unix server but lets users keep their old E-mail client software.

The biggest change for United after going to OpenMail — with 750 onboard so far — has been on the administrative side. The company is slowly cutting back from 65 separate Mail post offices to a few OpenMail servers.

And Barrons said the move has been pretty painless for the users themselves because they get to keep their Mail client software and work in a familiar environment. Many don't even realize they have been migrated over, he added.

Client/server E-mail systems provide more processing at the server and scale up to large numbers of users better than traditional LAN-based E-mail systems such as Mail, Lotus Development Corp.'s CC:Mail and Novell, Inc.'s GroupWise.

This is important to large, widespread organizations such as many airlines that want to rope in their E-mail infrastructure. For example, Delta Air Lines in Atlanta has been struggling since 1992 to rein in its mix of host- and LAN-based E-mail software used by more than 70,000 employees.

"OpenMail was developed from the enterprise perspective, focusing on management, throughput and reliability," said Gary Rowe, an analyst at Rapport Communications in Atlanta.

OpenMail has been the only strong client/server software on the market for two years because the other major vendors are just now taking their first stabs at such products, according to Rowe.

United has 80,000 employees worldwide and would like to eventually give them all E-mail access via OpenMail or host-based systems, Barrons said.

Currently, only about 6,000 users have E-mail access through Microsoft Mail. There is also some use of a mainframe messaging system.

But the more immediate goal is to move between 6,000 and 10,000 domestic users to OpenMail by year's end, starting at the airline's headquarters.

Barrons said United will also look at moving to Microsoft's Exchange client after HP brings out Messaging Application Programming Interface client support for OpenMail this spring.

Army changes client/server attack

By Gary H. Anthes

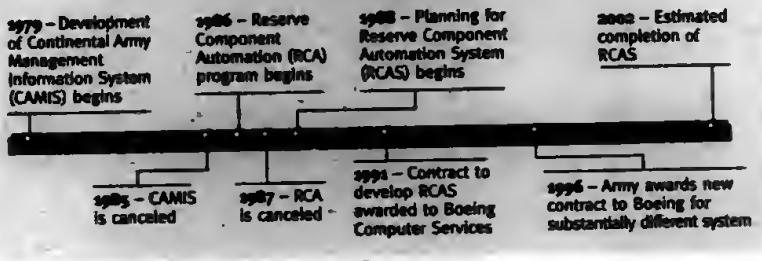
Sixty thousand diskless workstations, 10,000 Unix servers, 2 million lines of Ada code and multilevel security. It seemed like a good idea at the time.

But that was then — 1990 — and this is $500 million later, and the $1.8 billion project to set up the world's largest client/server system for the Army National Guard and Army Reserve recently completed a major course correction.

The diskless X Window System terminals became full-fledged PCs, Unix gave way to Microsoft Corp.'s Windows NT, custom Ada bowed to shrink-wrapped software and the elaborate security was canceled due to lack of interest.

The changes, plus earlier delays, pushed final implementation of the Reserve Component Automation System (RCAS) out to 2002, eight years later than planned. RCAS managers hope that cost savings from the restructured program will still allow the Army to complete the program within the original cost estimate.

The Army National Guard and Army Reserve have fought a battle to automate



Source: U.S. General Accounting Office and U.S. Army, Washington

Meanwhile, the two auxiliary forces' users march on with a hodgepodge of unintegrated systems and manual procedures. "I think we all get frustrated, working for a big employer like this," said Lt. Col. Steven Abel, director of information management at the Oregon Army National Guard in Salem. "But you never give up hope; you know it's going to come sooner or later."

The restructuring of RCAS is in part the result of rapid changes in technology, which made 1990 assumptions increasingly obsolete as the huge project crept forward. Another issue was the apparent failure of program managers to get enough user input early on.

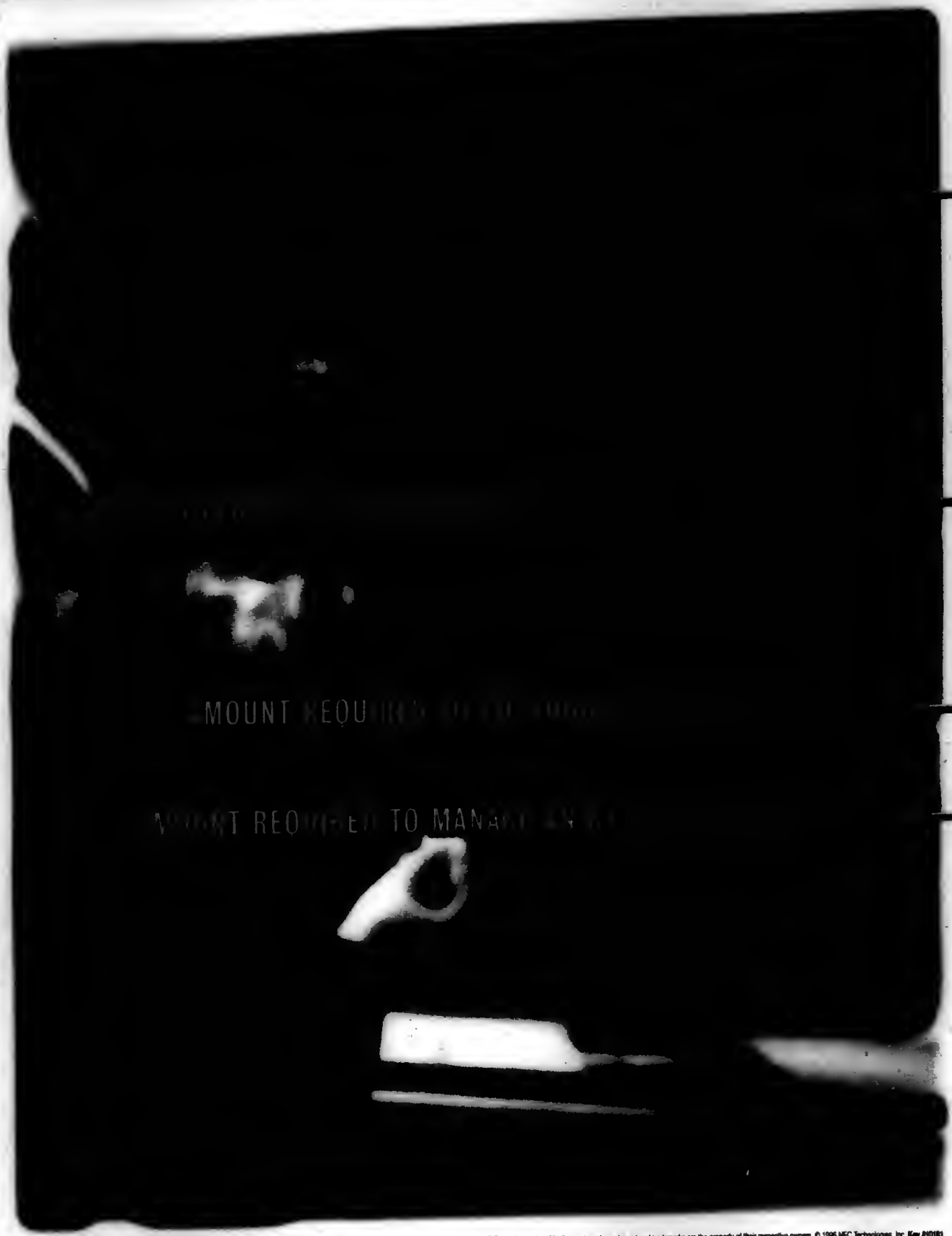
RCAS is intended to support the day-to-day activities of 10,500 Guard and Reserve units at 4,000 sites in 11 functional areas such as logistics, finance and training. It is also intended to enable the rapid mobilization of forces during wartime.

The custom Ada code was needed largely to satisfy very complex multilevel security requirements. Databases were to have held a combination of unclassified, confidential and secret data, with the operating system permitting access to just the data for which an individual user was cleared.

But it turned out that little RCAS data is classified, so multilevel database security was scrapped in favor of point-to-point encryption using the government's PCMCIA cards.

Meanwhile, users already accustomed to Windows-based PCs said "no way" to the unfamiliar Unix operating system and the limited diskless workstations. The revised system is "not some arcane system that is different from ones the soldier uses at work or at home," said Maj. Rusty Lingenfelter, director of information management at the Iowa Army National Guard in Johnston. "So they can come in on weekends and sit down to something that is familiar."

Despite the delays and changes, beta testers with the first few pieces of RCAS say they are bullish on the project. The Iowa National Guard is one such beta site. Capt. Allen Meyer, a personnel officer, said electronic mail with an electronic forms option has already streamlined operations and improved communications among Guard units in the state.



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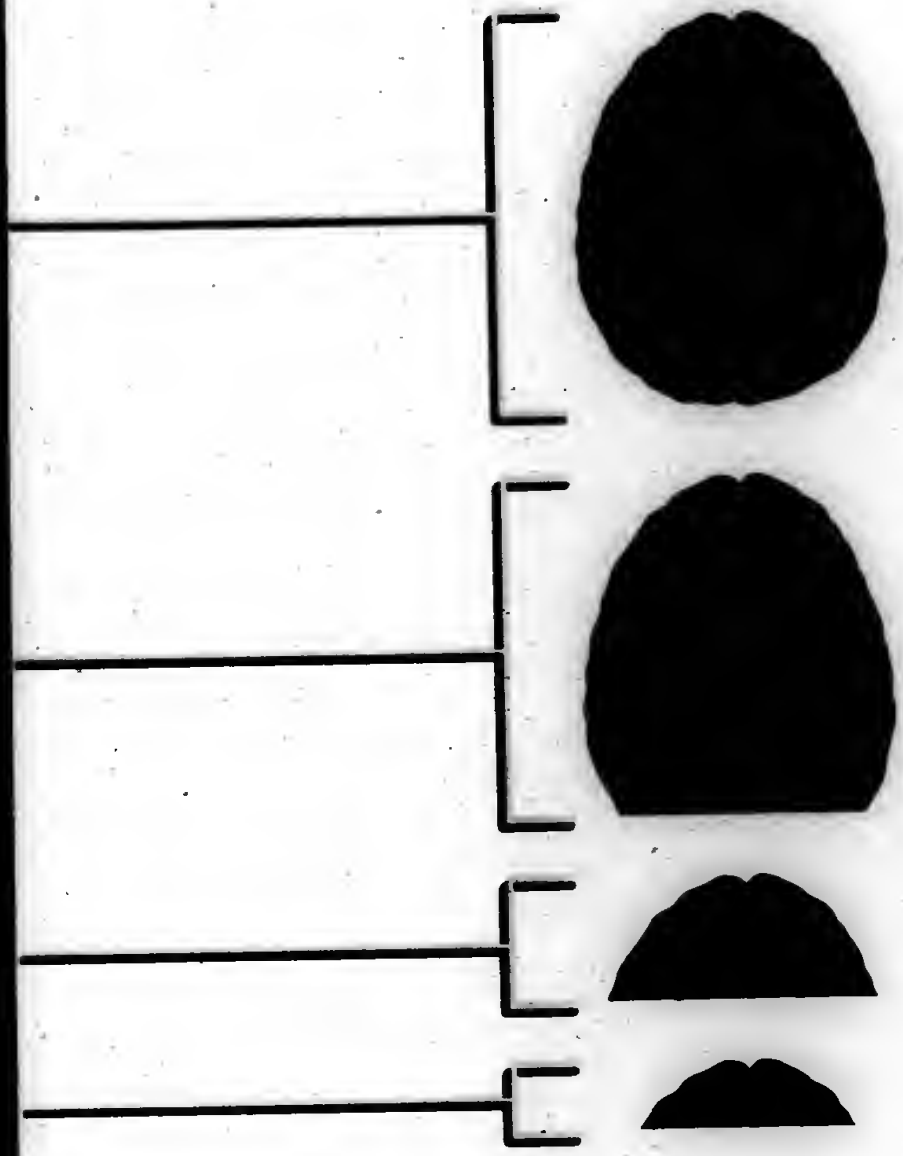

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Dow to upgrade to SAP's R/3

Firm hires Andersen Consulting to convert 10,000 end users to client/server

By Thomas Hoffman

You would need a general ledger system to list the Fortune 1,000 companies that are building their back-office financial and order entry systems using SAP America, Inc.'s R/2 and R/3 financial modules.

The tricky part for these firms is developing a coexistence strategy between the mainframe R/2 software and the popular client/server R/3 version.

How we did it

Dow Chemical and Andersen Consulting eventually may market a set of commercial coexistence methodologies based on their experience together.

That is typically a lengthy and costly exercise, as The Dow Chemical Co. is about to find out. The transition will mean three years of work for Dow and the addition of 500 outside consultants, programmers and project managers from Andersen Consulting.

Dow will need the time and extra resources to move its 10,000 global end users to R/3. Dow must keep its R/2 operations humming in North America, Europe, Latin America and Asia as it phases in new R/3 client/server modules.

Lesson learned

Most companies generally do a poor job of "estimating up front how long it's going to take them to get to R/3," said Stan Lepeak, program director of Advanced Information Management at Meta Group, Inc. in Stamford, Conn.

But after it spent three years rolling out SAP's R/2 systems, the $20.2 billion chemical giant was quick to recognize the time and effort it would take to get itself to the next SAP level.

Andersen will provide Dow with 250 to 300 project consultants and another 200 "variable" experts to identify methodologies, tools and techniques for the transition. Andersen's consultants and experts will offer their expertise in client/server development and planning. They will use resources such as Powersoft Corp.'s PowerBuilder and C and C++ programming tools, said Warren Watkins, Andersen's global client partner to Dow.

Dow will pay Andersen from $30 million to $50 million this year for its efforts. The firm has assigned 400 of its 1,500 information systems staffers to work with Andersen on its SAP initiatives.

Dow spends about $100 million each year on IS consulting, project and application support. That money helps to fund the SAP transition.

Under the deal between the two companies, Andersen is obligated to help the Midland, Mich.-based chemical company improve its IS productivity by 30% annually over the next three years. Dow plans to measure Andersen's success by bringing in outside vendors to benchmark its operations on a regular basis, said David Kepler, director of global information applications at Dow.

David Kepler, *Dow's director of global information applications, said the company plans to use outside vendors to track IS productivity gains promised by Andersen Consulting*

Dow also expects to cut its legacy application support costs by 20% this year by off-loading those functions to Computer Horizons Corp.

Help desks use Web, automated voice systems to let users help themselves

By Julia King

The corporate help desk used to be the place you called to get an expert's answers to your hardware and software questions.

Not anymore. If you contact a help desk or customer-support center today by telephone or electronic mail, chances are you will tap in to an automated system that lets you answer questions for yourself.

Do you need additional advice about corporate travel and expense policies, health care benefits or the employee stock ownership program? Increasingly, corporate help desk users will be able to drum up the answers to these questions for themselves.

Sears, Roebuck and Co., for example, has implemented help desk software from Quintus Corp. in Fremont, Calif., to set up an internal human resources and ethics issues help desk.

The help desk will serve workers from 2,700 Sears units. It will be the employees' first point of contact for questions about ethical behavior and business policy.

Sears is in line with the growing corporate trend of consolidating several business functions under one help desk umbrella.

Self-service is another big trend, analysts said. The idea is to tap resources such as integrated voice response systems, E-mail and the World Wide Web to give users easy access to as much information as possible.

"Internet browsers are becoming a pervasive, platform-independent way to reach clients," said Carter Lusher, vice president and research director of support strategies at Gartner Group, Inc., a research firm in Stamford, Conn.

Help costs

Gartner Group estimated that companies worldwide will spend $405 million on help desk and customer support this year, up 65% from last year's spending of $245 million.

The hottest help desk trends — including giving users the ability to help themselves — will be evident in products that will be announced this week at the Help Desk Institute and Support Services Conference and Expo in Reno, Nev.

Some of the more notable products that will be unveiled at the trade show include the following:

- **Molloy Group, Inc.**, an internal help desk software vendor in Parsippany, N.J., will demonstrate its knowledge kiosk software. The client/server software lets users get answers to technical and other questions via the Web. Users can type in English-language descriptions of their problems at their desktop PCs. The server-based kiosk software will be available in June and runs with Molloy Group's Top of Mind help desk software. Pricing starts at $12,000 per server, with additional per-user costs.
- **Baystone Software**, a new company in Saratoga, Calif., will announce a suite of client/server customer-support applications that the vendor will customize for a company's business processes. The software integrates a company's sales and marketing, customer support and quality assurance data, all of which can be analyzed with an executive information system.

Pricing is from $2,500 to $3,000 per seat for sites with 40 to 80 users; the cost includes customization and implementation.

Briefs

Federated's Guzman to join Kmart

Federated Department Stores, Inc.'s chief systems architect David Guzman will leave the company next month to join Kmart Corp. Kmart, which has delayed many information systems projects in recent months because of the company's financial hard times (CW, Feb. 5), has been without an architecture chief since Paul Gaffney left the company last fall.

NCR inks government deal

NCR Corp. has won a four-year, $150 million contract from the U.S. Defense Information Technology Office to replace and integrate a set of store automation systems for the Defense Commissary Agency's 300 military commissaries worldwide.

Sullivan takes Brooklyn hospital CIO post

Ann C. Sullivan was named chief information officer at Maimonides Medical Center, a Brooklyn, N.Y.-based hospital. She was formerly chief operating officer and chief financial officer.

Shell drills for software gusher

Shell Oil Co. and Simulation Sciences, Inc. in Brea, Calif., have signed an agreement outlining the development of a client/server-based plant operation software system code-named Romeo.

Aircraft components maker outsources

Rohr Aero Services, Inc., a wholly owned subsidiary of Chula Vista, Calif.-based Rohr, Inc., has signed an outsourcing agreement with Software Maintenance Specialists in Santa Ana, Calif., to implement a turnkey system based on Hewlett-Packard Co.'s HP 9000 systems under a five-year contract. The system, to be rolled out over the next 15 months, will be designed to link and standardize operations between Rohr Aero Services in Fairhope, Ala., with its overseas facilities in France and Singapore.

SHL goes Hollywood

SHL Systemhouse, Inc. has tapped Lawrence Kirk Jr. to manage its new Entertainment and Media Division. Kirk, 48, was a senior vice president responsible for worldwide operations at The Samuel Goldwyn Co. in Los Angeles.

The wait for new technology is getting shorter.

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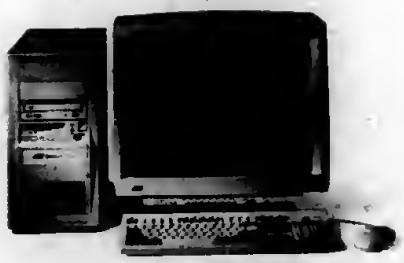

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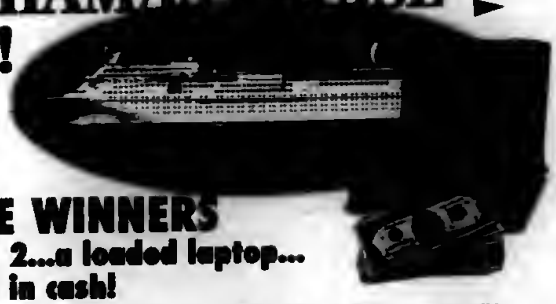

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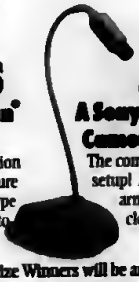

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2. Who had the lead role in the 1970 movie *The Computer Wore Tennis Shoes*?
3. What high-tech commodity did *The New York Times* report in 1994 was even hotter than illegal drugs on the black market?
4. What computer company was the sponsor the the 1950's TV show *What's My Line*?
5. In what year was the IBM PC introduced?

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▶ Glass ceiling or glass slipper? Walk in the shoes of IS women. See Ms. MIS, page 86

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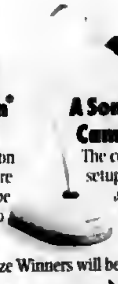
A fully portable multimedia solution for laptop computers! A full feature CD ROM player with PCMCIA Type II card plus stereo headphones. Photo CD and Windows compatible.



5 SECOND PRIZES

A Sony CCD-PC1 Computer Color Video Camera

The complete video-conferencing and audio-video capture setup! A high-resolution color video camera on a 11" flexible arm with built-in microphone, manual focus control for close ups and an iris control for lighting adjustments.

Grand, First and Second Prize Winners will be announced by July 15, 1996.

1 Sony Magic Link™ Personal Communicator

Use smart messaging to help manage all your electronic communications – fax, e-mail, phone or pager.

SUPER PRIZES AWARDED EACH WEEK!

5 Dunkin' Donuts "TechnoTrivia Tuesday" Coffee Breaks

Each Tuesday five winners and their associates (up to 20 people) will receive Dunkin' Donuts gift certificates for 3 dozen donuts, a Dunkin' Donuts coffee thermos, a pound of ground coffee plus an engraved TechnoTrivia plaque.

Please pass along this issue of COMPUTERWORLD to an associate after you have finished playing the game.

How to play COMPUTERWORLD's TechnoTrivia

1. Look for the COMPUTERWORLD TechnoTrivia icon to find the answers (planted throughout this issue) to the TechnoTrivia questions listed on this page.
2. Enter the page number containing the correct answers via COMPUTERWORLD's Web site on the Internet: **http://www.computerworld.com**
3. On the Web site Entry Form, identify the page number in this week's issue of COMPUTERWORLD where the correct answer to each TechnoTrivia question appears.
4. Or you may enter by fax using the Fax Entry Form below.

Trivia questions and answers provided and/or verified by Christopher Morgan and The Computer Museum.

TO FAX IN YOUR ENTRY, COMPLETE THIS FORM AND FAX THE COPIED PAGE TO:
1-402-572-6410

Question #	Correct Answer on Page #
1.	
2.	
3.	
4.	
5.	

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Title _____

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City _____

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Are you a COMPUTERWORLD subscriber? ☐ yes ☐ no (optional)

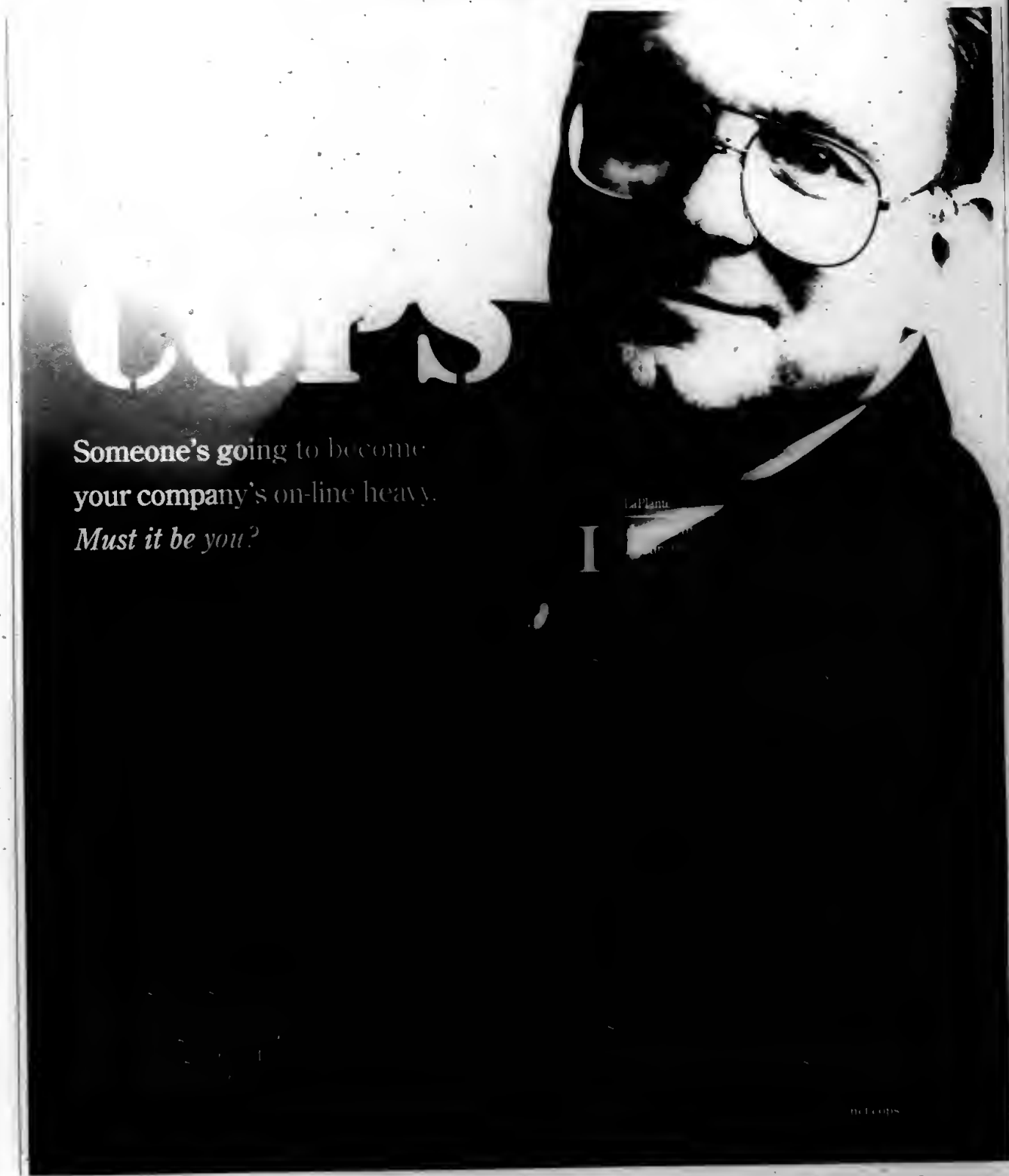
This Week's TechnoTrivia Questions

1. What computer had the names of the people who helped develop it etched inside every case?
2. Who had the lead role in the 1970 movie *The Computer Wore Tennis Shoes?*
3. What high-tech commodity did *The New York Times* report in 1994 was even hotter than illegal drugs on the black market?
4. What computer company was the sponsor the the 1950's TV show *What's My Line?*
5. In what year was the IBM PC Introduced?

NO PURCHASE REQUIRED. This offer is governed by a complete set of Official Rules, published on COMPUTERWORLD's web site at http://www.computerworld.com. To receive a written copy, send an SASE to COMPUTERWORLD's TechnoTrivia Rules, PO Box 4051 Marblehead, MA 01947. Find the five correct answers to the TechnoTrivia questions in each issue and complete the entry form by entering the page number where you find the correct answer to each corresponding question. Play all 19 weeks and increase your chances of winning a weekly prize to one of 13 existing final prizes. One entry per person per week. TechnoTrivia is open to residents of the U.S. 18 years of age or older who are IS professionals – except employees of companies that manufacture, distribute or resell computers and computer related equipment, employees and their families of International Data Group, Inc.(IDG), their affiliates, subsidiaries, their advertising and production agencies as well as other publishing companies serving the computer or high technology industry. Weekly and final prize winners will be selected at random from among all those submitting correct answers. Sweepstakes drawings will be conducted by MILL HOUSE McCABE, INC., an independent judging organization whose decisions are final in all matters relating to the offer. Weekly entries must be received by 11:59 pm on Thursday following the publication of each issue of COMPUTERWORLD. All entries eligible for the Final Prizes must be received by 11:59 pm Friday, June 3, 1996. Void where prohibited.

Managing

Glass ceiling or glass slipper? Walk in the shoes of IS women. See Ms. MIS, page 86



'NET COPS

Drop that cop

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— Alan R. Earls

IS Manager's Bookshelf

New books, videos and CD-ROMs

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William Eager

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Lucas describes the benefits of using contemporary information technology to create leaner, more responsive business organizations. He contrasts the hierarchical structure, physical proximity and reporting and control mechanisms of traditional organizational design with the enabling features of modern information technology — home workers, virtual teams, blurred organizational boundaries and so on.

Lucas makes the case that classical organization design concepts are ineffective and outdated. He argues that enlightened executives must use information technology in at least one of the following three key ways:

- To extend and enhance the organization's capabilities (and shed cost) by moving functions to suppliers or outsourcers. Link with them via electronic data interchange, shared networks or integrated business systems.
- To tightly group geographically dispersed workers and build ad hoc teams and virtual organizations via groupware, electronic mail and shared processes and systems.
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To support his thesis, Lucas retells information technology folk tales about Ameri-

tivity, they could miss a rare opportunity to help lead their companies into the future. That's why Sateesh Lele, senior vice president and chief information officer at Telogy, Inc. in Menlo Park, Calif., says it's critical for IS to handle the interface between employees and the on-line world. "The Internet is going to play a huge role in Telogy's future," he says. "IS definitely wants to be a leader for all on-line activities."

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Lele and his staff determine — with input from other managers — which employees have a legitimate need for on-line privileges. They monitor usage and initiate action if they see something wrong. "As technologists, we're more sensitive to the potential risks of abuse than a marketing or financial manager could possibly be," Lele says.

But he says senior management support is necessary to bear this responsibility. He pushed Telogy's executive council to write a clear procedure for dealing with offenders. And Lele devises corrective action with the employee's top manager and a representative from the human resources department.

Most IS managers take a position between Lele on one side and Tunstall and Alvey on the other.

Teresa Pudi, director of MIS at WMS Industries, Inc. in Chicago, seems to represent the mainstream. She says some monitoring by IS is in order. She's worked with WMS human resource professionals and department managers to define appropriate behavior. WMS has "grave concerns about security and whether employees are wasting time," she says. But Pudi says she doesn't want to judge her fellow employees. She says she's willing to create reports about how much time each employee spends on-line, which sites they visit and for how long. But she turns over these reports to individual managers to use or ignore.

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It's clear IS managers will debate their role in setting 'net usage policy for a long time to come. Should IS managers add judge, jury and executioner to their job description? You'll find many answers out there. But even the most tough-minded IS managers agree on this: Never play the heavy by yourself. ■

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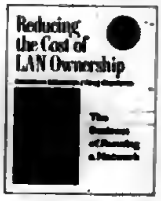

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Do you ever completely zone out in a

meeting because the management jargon is so thick that you just can't keep up? Do you then feel stupid because everybody else in the room is so fluent? Maybe they're all peeking at this book under the table. It's a good guide to the business process, quality and strategy terms that clutter your day. The book is business- rather than technology-oriented, so it provides a good way for technologists-turned-managers to get up to speed.

Software Engineering Risk Management
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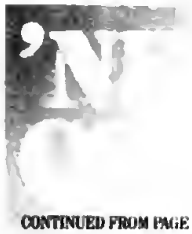

CONTINUED FROM PAGE 81

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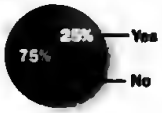
QuickPoll

In February, @Computerworld invited visitors to its Web site to answer several questions about Internet monitoring; 153 responded. (QuickPoll results aren't scientific data; respondents aren't necessarily IS managers and may respond more than once.)

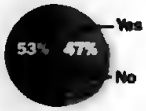
Most respondents said IS shouldn't police the Internet . . .

Do you think it should be the IS department's responsibility to monitor on-line use?



Many companies have Internet policies, but few apparently enforce them.

Does your company have a policy for end users who go on the Internet?



Is it enforced?

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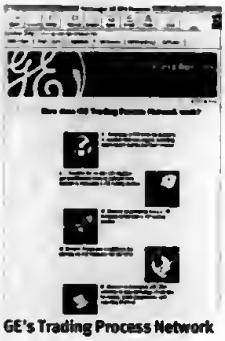

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Ready, aim, snoop?

Before you check on users, check out this checklist

- **Create a policy that's in line with your corporate culture.** Employees who are used to autonomy will resent restrictions and monitoring more than those who are accustomed to stringent control of corporate resources.

- **Remember that the full benefits of the Internet have yet to be realized.** A staffer who appears to be wasting time surfing Web sites could be looking for innovative ways to improve job performance, serve customers more effectively or generate new revenue.

- **If you intend to monitor employee usage of the 'net, the Electronic Communications Privacy Act requires that you publicize that policy.** "It's possible that simply notifying your employees of your policy may be sufficient to protect you legally, but it's always better to get consent," says Barry Weiss, a partner at Gordon & Glickson, a law firm in Chicago.

- **Beware of being too dictatorial.** IS erred in that direction during the PC revolution; the result was virtual anarchy among users. An attempt to rein in users too tightly could instigate a similar revolt.

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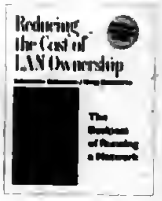

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From glass ceiling to glass slippers

What gave women IS managers their start? Not some corporate prince, but the lowly word processor.

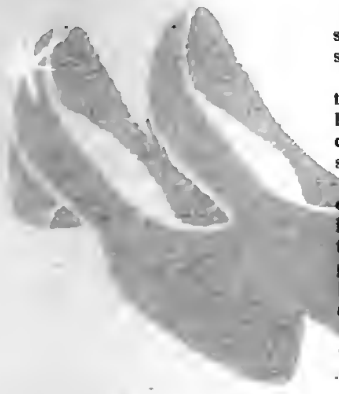
WOMEN IN INFORMATION SYSTEMS

Ms. MIS

By Laura DiDio

"Make your employers understand that you are in their service as workers, not as women."

– *Susan B. Anthony,* from an article in the Oct. 8, 1868 edition of *The Revolution*, a women's suffrage newspaper



Those words by Susan B. Anthony still ring true almost 130 years later. But the burgeoning data communications field has turned the glass ceiling into a glass slipper for many women.

Women comprise nearly half the workforce, but there's still an unwritten rule that says: "Lady, smile pretty when we pay you 50 cents or 60 cents for every $1 a man pockets. Know your place and stay there." Even professional women find the situation tough to crack.

Yet in the early 1980s, the glass ceiling diverted many women into successful careers in data communications.

Back then, managing the occasional PC or departmental computer was considered just another menial office task. Few in corporate America predicted that computers would become pervasive. Women such as Kristen Marks and Terry Stahling were given the opportunity to manage technology by default. Now, they run information systems operations.

Cumulative experience

This trend knows no geographic or vertical market bounds. Marks and her husband, Howard, manage Networks Are Our Lives, a consulting firm in Red Hook, N.Y., that specializes in network design. Stahling oversees the New York City Department of Transportation's DOTNET, which spans 6,000 miles of streets and bridges throughout New York City.

Both women say they owe a lot of their success to their earlier roles managing households, carpooling the kids, ordering the office supplies and dickering with vendors for the best prices.

Ten years ago, Marks was a single mother of two and an administrative assistant at a film production company. Her association with computers began because she was the only person in her office who was willing to turn on the Macintosh. Whenever she had a problem, she called the local Computerland store for technical support. Marks became such a regular caller, the dealer offered her a job as a technical trainer.

Marks was hired over her own protests. She says she didn't even know where the power switch was on an IBM PC.

Her manager told her she needed just three things to be a trainer: the ability to speak in plain English; the ability to control a class and tell students to shut up; and a lack of ego, so she could say, "I don't know the answer, but I'll find out."

Out of desperation, she became adept at using everyday analogies to explain abstruse networking terminology. "I compared [the process of] transmitting data packets over Ethernet to a packet/receiver buffer in a file server with a [United Parcel Service] delivery in which packages were left on my porch," Marks says.

Pragmatism spurred her on: The higher salary would let her pay her bills. Only afterward did Marks realize that IS paid women more equitably than any other profession in the U.S. "We earned 83 cents to a man's dollar. This was even better than women attorneys, who were only getting about 56 cents on the dollar back in '86," she says.

Pure propinquity likewise propelled Terry Stahling toward computers and networking. She was a psychology major whose background was devoid of all things technical. She was a midlevel analyst at the Department of Health in New York City. One day she was asked to head a project to train city commissioners on IBM PC/XTs and study the feasibility of word processing.

Stahling bought three Wang office information systems for the commissioner's office, learned the systems and trained the staff. Later, she was asked to be the systems architect to link 300 PCs in 11 buildings. "During the day I *pretended* to give support, and at night I read the manuals," Stahling jokes.

Stahling's trial-by-fire experience lasted 12 years. "I never [had taken] a computer training class until 1994 when I took 'Introduction to Client/Server Computing.'" By then, Stahling had already implemented the largest wide-area network in New York government.

She survived by using her wits and the negotiation skills she had honed as an analyst. Recalcitrant colleagues soon cooperated when Stahling told them their departments would have to wait until the second enhancement.

When it came to bargaining with vendors, Stahling adopted a "provide me with what I need at this price or I'll go elsewhere" attitude.

Stahling didn't run into the glass ceiling until 1988; her boss left the Health Department, and she applied for his job. She went around the ceiling, not through it, by accepting a senior MIS manager position at the Department of Transportation in New York City. Eight years later, she still runs the show.

"Yes, we have more opportunities than ever before. But women still have to rise above the occasion every inch of the way," Stahling observes. ■

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How has the glass ceiling affected your IS career? Share your experience with others this week when "Ms. MIS" columnist Laura DiDio hosts a whiteboard on @Computerworld, our Web site. The address is http://www.computerworld.com.

Buyer's Guide: Win 95 and NT

Taking root

Windows 95 and NT start to prove and disprove themselves in the field

By James M. Connolly

The flashy Comdex/Spring '93 debut of Microsoft Corp.'s Windows NT is a distant memory now. And we can now look back and laugh at the crowds that jammed Egghead, Inc. stores last August for first-run copies of Microsoft's Windows 95.

Windows NT, the 3-year-old operating system that can run as either a desktop or server platform, and Windows 95, successor to Windows 3.1 and MS-DOS at the desktop, have some legitimate field experience. So corporate information systems managers have had a chance to evaluate the software's performance and functionality and to think about the costs, staffing and other issues related to rolling out Microsoft's key operating systems.

NT has had more time to prove itself and hasn't been burdened by the demands of the consumer market. As a result, it is scoring points with IS managers more quickly than Windows 95. With one eye on customer satisfaction and the other on identifying implementation issues, *Computerworld* commissioned Market Data Group, a Framingham, Mass., research firm, to conduct in-depth interviews with managers at 20 organizations that have at least three months of experience with NT and Windows 95.

Managers gave a clear edge to NT in terms of satisfaction, awarding it an average grade of B+ (4.31 points on a 5-point scale), compared with an average of B- (3.75 points) for Windows 95. Those grades track closely with a January survey by *Computerworld* in which other users gave NT Workstation and Windows 95 similar B+ and B- grades on "overall performance."

What we learn from these managers is more than an average score that translates roughly into "good." Their comments about the products and the reasons behind the scores provide insight into the strengths and weaknesses of both operating systems.

It is clear that managers recognize it is still early in the game for Windows 95. Most predictions for the operating system, formerly known as Chicago, indicate that the corporate world won't fully roll out Windows 95 until late this year or early next year. As it stands today, most of the 20 managers surveyed by Market Data Group say they are still in the early stages of Windows 95 implementation, typically reporting that they are testing Windows 95 on a

Taking root, *page 88*

NT on top

Grade averages from 20 users show Windows NT beats or ties Windows 95 in every area except PC compatibility

	Win 95	NT
Overall	B-	B+
Functionality	B	B+
Compatibility with PC	B	B-
Ease of installation	B	B
Stability	C+	A-
Ease of use	B	B
Multitasking	C	A-
Performance	C+	B+
Management	C+	B+

IS managers find savings by linking operating system migrations to PC and server replacements, but the memory costs still bite. PAGE 94

What convergence? You may see more commonalities between Windows 95 and NT, but Gartner Group says don't expect Microsoft to go with a single operating system. PAGE 94

Users are trying out Microsoft's BackOffice piece by piece. PAGE 92

Taking root

CONTINUED FROM PAGE 87

few machines or installing it for selected applications or new users. Most of the 20 managers have NT Server in at least limited production mode and have experience with NT Workstation.

Those who use Windows 95 in the field say it lacks stability, has some compatibility and driver problems and isn't up to snuff in terms of multitasking. They give it good grades for ease of use, but the operating system's immaturity has led some users to say they will drop it or at least use it with caution.

One manager abandoned Windows 95 because of application compatibility problems. "We are always in such a time crunch that if something doesn't work the first time or doesn't work easily, we are very apt to scrap it and move on," says Allen Lovell, senior research engineer at the Mobil Research Center in Paulsboro, N.J. "And that's what happened here." Lovell advises a move to NT. "I'd tell anybody to use it. It's better than Windows 95, and it's easier to use than Windows. I wouldn't use anything else."

It works out that NT shines in some of the very areas in which Windows 95 stumbles.

NT gets good grades for stability and multitasking. Even where NT attracts arrows for problems with hardware compatibility and complexity, it averages respectable B grades. Two common themes run through the comments of managers who discuss NT's PC compatibility and complexity. First, to ensure compatibility, they advise that you install NT on a new hardware platform — one that is certified to be NT-ready. Second, NT is complex — it can be hard to install and a challenge to use — but managers say that is to be expected with a robust multiuser operating system. The bottom line is that Windows NT is much more than just Windows, they say.

Another factor underlying the average scores is that there are broad ranges in satisfaction and user experiences. Take the ease of "stability." While Windows 95's grade averages out to a C+, meaning that most gave it a B or C, one manager at a huge, geographically dispersed organization — and an acknowledged DOS supporter — rated it very poor. Another manager who likes Windows 95 gave it a D, and a third manager gave it an A for stability.

What becomes apparent is that users who work with the same product will have drastically different opinions and experiences. Their comments and individual grades may provide insight into how Windows 95 and NT respond in particular environments. And they could offer buyers more information than they will get from a single lunchtime conversation with peers down the street. ■

Connolly is *Computerworld*'s Editor, Technology Evaluations.

The dual existence of NT

Users compare NT with two classes of products, those at the desktop level and those on the server.

At the desktop level, managers are weighing whether they should go with NT Workstation or Windows 95. Those who consider their staffs to be power users often have firmly settled on NT Workstation. Those who are looking for a basic operating system for average users lean toward Windows 95. But most are waiting and watching to see if Microsoft will consolidate the two operating systems or at least combine their core technologies (see related story, page 94).

Several managers lean toward NT on the assumption that Microsoft will effectively move the Windows 95 Explorer interface to NT 4.0, now in beta testing (see NT 4.0 beta review, page 45). Several NT advocates were blunt; their advice to their peers was "Skip Win 95."

At the server level, managers tend to compare NT Server with Unix or Novell, Inc.'s NetWare. It seems to be holding its own against NetWare, at least at the workgroup level, and draws favorable comparisons with Unix. Several users say NT Server lacks the systems management tools available for Unix and Unix's openness. Some users also suggested that some of Windows 95's management tools, such as the Plug and Play feature, be ported to NT. Several users advised their peers to recognize the complexity and plan accordingly by getting the appropriate training and allotting enough IS resources.

Scalability also could be a challenge for NT — some of the most experienced NT users say it's fine at the department or workgroup level but doesn't have the power to host multidepartmental needs, such as large databases, that require more than a couple of CPUs in multiprocessor systems. And those NT veterans asked for the more comprehensive directory services they will need as they build enterprise networks. — *James M. Connolly*

Managing user expectations

University of North Carolina

The university's primary research and instructional computing facility in Chapel Hill, N.C., has installed Windows 95 on a variety of notebooks and desktop machines for selected applications. Novell's NetWare supports distributed computing, but the center is testing Windows NT.

"My guess is that in two years, we will probably be Win 95 more than 3.x or 3.1, and it's not necessarily because it's the best. Let's face it, Microsoft carries a big stick, and I think machines are going to ship with Win 95 all installed," says Dan Wingate, associate director of client services.

Scores

Windows 95: Wingate gave Windows 95 a mix of B's and C's.

Windows NT: Scoring mostly A's, NT fell to a B on ease of installation and a C on PC compatibility. Tom Rutledge, a computing consultant, says, "The only time I was able to crash it was when I was intentionally messing with the network configuration."

Wish list

That Microsoft and the media hadn't made so much noise about Windows 95. There was concern that users would "jump on the bandwagon thinking [Windows 95] was some kind of panacea," Wingate says. "We knew there were some problems with connectivity with other networking software, and we worried that people would attempt to install it on machines that weren't capable of running it."

Advice to peers

Windows 95: "Proceed cautiously and take a realistic look at the desktop machines you already have. If you need to life cycle some of the equipment out, budget it and do it!" Wingate says.

Windows NT: Go with an Intel Corp. Pentium and at least 1G byte of disk space because "even though the operating system doesn't require it, you're going to run applications that will," Rutledge says.

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Win 95 and NT

Snapshots

NT holds promise

Town of Windsor

This Connecticut town runs four Digital Equipment Corp. Alpha and Compaq Computer Corp. NT-based servers. Windows 95 scores well, but good experiences with NT and the promise of NT Version 4.0 mean the town plans to use NT Workstation.

Information specialist Dan Sullivan would like to see "better domain management tools and network directory services" for NT. He warns users that NT is a "complex working system and has an extensive learning curve. Getting a handle on TCP/IP and the intricacies of NT will be well worth the time."

Security concerns

Federal Aviation Administration

The FAA technical center in Atlantic City is in full production with Windows 95 or Windows NT for more than half its users. Computer specialist Frank Nastro says NT is the way to go, but the FAA's choices and ability to migrate are limited by budget constraints and standards. Nastro gives both products mostly A's and B's, except for C's in Windows 95's multitasking and NT's PC compatibility.

NT hits limits

Fort Worth Independent School District

Bill Hix, information systems director of this sprawling Texas school district, with 138 campuses, 9,000 employees and 73,000 students, says he wouldn't recommend Windows 95 and NT for very large networks. The district is testing Windows 95 and recently ended tests of NT, deciding not to go forward with NT. Hix, who admits he prefers DOS to Windows, says of the future, "We are embarking on a campaign to replace old computers now," and Windows 95 will be installed on all new computers. "NT is great for small workgroups, but we do not have any small workgroups. Everything we do is giant size."

Hoping for industrial strength

Bemis Co.

Bemis is a Minneapolis-based manufacturing firm with 8,000 employees in North America and Europe. Rod Walsh, emerging technology architect, says Bemis runs NetWare on 75 servers and Windows NT on 40 servers and has designated NT as its application server of choice. Bemis is testing Windows 95 on a few machines. It is undecided about which operating system will dominate the desktop in two years, although Walsh says he leans toward NT. He says one mistake by Microsoft may have been to work so hard to make Windows 95 compatible with the installed base of hardware and software.

Scores

Windows 95: Walsh rated Windows 95 with A's and B's except for C's in stability and performance and a D in multitasking. "It has been fairly stable, but it was a little disappointing."

Windows NT: The only grades lower than a B were the C's that Walsh gave NT on PC compatibility and performance.

Wish list

Windows 95: "I wish Win 95 was a little more industrial-strength, but maybe I am NT-biased."

Windows NT: Microsoft should allow customers in its maintenance program to simply upgrade to NT and not require customers to purchase a new operating system.

Advice to peers

Windows 95: Don't be enamored with the prettiness. "Dig under the cover and see what's there, and then decide because it's going to be different for everybody. It's very much a stronger system than DOS Windows, so it might fit perfectly."

Less focus on backward-compatibility would have been nice. — Rod Walsh

NetWare, NT showdown

Christian Broadcast Network

Having recently moved off the mainframe, the network has 800 users supported by a mix of Unix, Novell's NetWare and Windows NT. The organization is moving to Microsoft SQL Server for its transaction processing but is debating whether to make NetWare or NT its core network operating system. Windows 95 is being used for selected applications. "Win 95 is ideal for our mobile users. It's easy to use and transport," says Vice President of IS Paul Flanagan, citing Windows 95's power management and Plug and Play capabilities. He says he expects Christian Broadcast Network in Virginia Beach, Va., to be running NT Workstation on most desktops within two years.

Scores

Windows 95: Flanagan gives a broad range of grades to aspects of the two products. Windows 95 gets A's for PC compatibility, ease of installation and ease of use and a B for functionality. Yet, it falls off to a D for stability, performance and management and to an E for very poor multitasking.

Windows NT: Giving NT A's for half the categories, Flanagan awards a B for management. However, ease of use received a C, ease of installation a D and PC compatibility an E. Flanagan says that without a robust bindery service, NT works fine for 250 users but "coughs and sneezes" at 800 users.

Wish list

Windows 95 interface for NT.

Advice to peers

"Hold off [on Windows 95] and go straight to NT Workstation."

Win 95 for new machines

Commonwealth of Kentucky

The state's Department of Information Systems ran into compatibility problems when it tried to load Windows 95 on its existing machines. Therefore, it will implement Windows 95 only as it purchases new systems, according to Ralph Long, senior systems consultant. Installation should be completed in two years. The agency is testing Windows NT on a few machines, with an eye toward using it as a platform for Microsoft Exchange and to support another distributed application.

Scores

Windows 95: Long gave Windows 95 A's in functionality and ease of use, a B for stability and performance but C's in other areas.

Windows NT: NT scored mostly A's and B's but fell to a C for performance and a D for ease of installation. "If it doesn't work with the point-and-click install, then you need a rocket scientist to interpret what to do next."

Wish list

Windows 95: Make it less of a resource hog and incorporate the Plus Pack into the basic package.

Windows NT: Make installation more intuitive. Improve documentation and user interface to facilitate getting the networking portion of NT working.

Advice to peers

Windows 95: Be very careful in loading Windows 95 on existing machines. "This software strains the limited hardware capabilities of older machines."

Windows NT: Get training before you try to implement NT.

Win 95 compatibility woes

Mobil Research and Development

This center in Paulsboro, N.J., has 600 workers who use PCs that primarily run Windows for Workgroups and about 50 Macintoshes. NT Server and NT Workstation support fewer than 25% of the users. A test of Windows 96 recently was abandoned because of difficulties running some of Microsoft's own software, including Access. As far as senior research engineer Allen Lovell is concerned, NT is almost identical to Windows, but users will experience far fewer problems. The best news is that you can have multiple applications open and running, he says.

Scores

Windows 95: Lovell gave Windows 95 D's in functionality, multitasking, performance and management. The remaining areas brought B's and C's.

Windows NT: Lovell's grades were stronger for NT, which he awarded all A's except for B's in ease of use, multitasking and management.

Wish list

Windows NT: Better disk maintenance utilities and greater support for PC cards and a SCSI host adapter.

Advice to peers

"Bypass Win 95 and try NT.... I'd tell anybody to use NT. It's better than Win 95, and it's easier to use than Windows."

Win 95 for home, NT for work

Coda, Inc.

This Manchester, N.H., company, with 160 users, develops client/server financial software for a variety of platforms. Windows 95 is starting to make some inroads in IS, primarily in the testing stage and in some development areas. Coda has seven NT Server machines, and some users run NT Workstation.

MIS Director Jim Chilton says, "If the reviews of NT Workstation 4.0 are as favorable as we expect them to be, that's where we'll be [in two years]." Business connectivity is a lot stronger than with Windows 95, so "you'll see Win 95 running at home and NT Workstation running at work," he says.

Scores

Windows 95: Chilton gave all A- and B grades.

Windows NT: Chilton rated NT with mostly B's, an A in PC compatibility and C's in performance and management.

Wish list

Windows NT: "I wish the user interface for setting up domain environments were cleaner." He says he would like enterprisewide directory services to replicate all changes throughout the system automatically.

Advice to peers

Windows 95: "Tread carefully. Do not allow senior management to force you into something you're not ready for." Make sure they understand the costs of implementation.

Windows NT: Don't underestimate the skills required to maintain NT. "What I see is Unix with a pretty face. NT has the same complexities, issues and problems that arise in a Unix environment."

A vote for OS/2

U.S. Department of Health and Human Services

The agency runs mission-critical applications on a mainframe and select Unix systems, but it's testing Windows NT and Windows 95 on a few machines. Charles Hunter, director of IS, has major concerns about Windows 95 and NT. Those concerns include memory demands, software compatibility, scalability and portability.

"Overall, I still think OS/2 is a better choice for an operating system [compared with] Win 95," Hunter says. He cites OS/2's stability and his success with OS/2 as a database processor that runs browser software. Hunter anticipates that his site will primarily use Unix and Windows NT two years from now. "However, it will take a lot of work to get to that point," he says.

Scores

Windows 95: Hunter gave Windows 95 mostly D's. He gave it a C for functionality, PC compatibility and ease of use and a B for stability.

Windows NT: Hunter gave NT straight C's.

Wish list

Windows NT: "Better directory services, which currently no vendor is really prepared to offer us," he says. And an open systems TCP/IP stack instead of the proprietary stack NT uses.

Advice to peers

Windows 95: "Wait, because the product isn't there yet," Hunter says. Windows 95 and NT have a lot of potential, he says, but it's upsetting that Microsoft spent so much money on advertising, telling everyone how great and marvelous Windows 95 was going to be, "and it's not quite there yet."

Windows NT: "Wait for it, work with it, play with it, try, hope and pray — and don't get too frustrated!"

NT proves right for CAD

Gould Evans Goodman Associates

About a quarter of the 120 users at this Kansas City, Mo., architectural firm are running Windows 95 on new PCs. The 120-user network is built around servers based on Windows NT. "We get a lot of CAD work, and it is for that platform that we really want to go to NT over the long haul," says IS Manager Rob White. For the general user, such as our project managers, secretaries and support staff, Windows 95 is adequate.

Scores

Windows 95: White gives Windows 95 A's in PC compatibility, C's in multitasking and management and B's in other categories.

Windows NT: White awards NT A's in everything except functionality (B), PC compatibility (B) and ease of installation (B+).

Wish list

Windows 95: That the user be able to attach to a printer or a server without having to deal with setup each time.

Windows NT: Add the accessory programs from Windows 95. The Exchange Client and Briefcase technology should be resident in NT itself.

Advice to peers

Windows 95: "Put Win 95 to the full test. Don't create a little isolated test environment because users don't work in isolated environments."

Windows NT: "Do not underestimate the memory requirements. I'd suggest taking a conservative estimate and then doubling it."

Snapshots

Appeal of ease of use

United Power Association

In production with Windows 95 on 25 PCs — about 10% of its desktops — and testing NT Server and NT Workstation, this Elk River, Minn., organization expects Windows 95 to be the primary desktop operating system in two years. Windows 95 received an A for ease of use, but Manager of Information Services Patrick Casey gave C's to Windows 95 for stability and to NT for PC compatibility and ease of use. He says he wishes Windows 95 would disappear so that Microsoft would have only one operating system.

Heading for Win 95

Family Life Ministries

With 200 PCs, this organization in Little Rock, Ark., plans to move its users from Windows 3.1 to Windows 95 within a few months. A few users have been testing Windows 95, and NT has been operating as a database server with SQL Server for nine months. Except for an A in functionality and a C in multitasking, Windows 95 received B's. NT picked up A's and B's in general but a C in PC compatibility. LAN administrator Tom Seely ran into compatibility problems with NT on his Digital Alpha server. Of Windows 95, he advises, "Run it yourself, and get some learning curve behind you."

Incompatibilities

A communications company

The IS group supports 1,200 to 1,500 users nationwide and is testing Windows 95 on a few machines. The firm is in full production with Windows NT. Windows 95 earned all B's, while Windows NT earned mostly A's. The only C was in PC compatibility.

Also, but memory hogs

An outsourcing company

Supporting a major government installation, this organization is migrating from Mac-

Snapshots, page 92

NT brings stability

Robbins Auto Parts

Windows NT seems to be the way to go for this company in Dover, N.H. The IS staff supports about 150 users; 80% of those users are connected through terminal servers on a statewide Novell LAN. One machine runs Windows NT Server.

The company is testing Windows 95 and reports that it is better than Windows 3.1 in terms of stability and remote communications. Robbins plans to expand its use of NT Server and expects NT Workstation to be its primary desktop operating system in two years.

Assuming the company can complete the necessary hardware upgrades, "We will migrate for the security and stability of NT. I expect we will get everybody over to Win 95 in the next year," says Bill Pelletier, MIS manager at the firm. "Then, as soon as the Win 95 interface for Win NT is available, which will provide a nicer look and more functionality, we will move everybody over to NT," he says.

Scores

Windows 95: Pelletier gives Windows 95 A's in stability, ease of use and management and B's in functionality and ease of installation.

Windows NT: Pelletier rates NT with A's in half the categories. He gives it B's for functionality and manageability, a C for installation, and a D for PC compatibility.

Wish list

Windows 95: "Much, much tighter security and a little bit better support for some of the older hardware."

Windows NT: Lower hardware requirements, particularly from the client standpoint.

Advice to peers

If a site already has NT-capable hardware, then go ahead and bring NT in. Otherwise, go with Windows 95 [to avoid] NT-compatibility problems.

Making use of today's hardware

Arthur Andersen

This Andersen location in New York runs Windows 95 in production mode on about 1,200 desktops and uses Microsoft's Office 95. The company expects to standardize on Windows 95 because it can run in 8M bytes of memory on the company's 33-MHz Intel Corp. 486-based PCs.

"If users go to all 32-bit applications, they will find Win 95 multitasks beautifully and works great," says systems analyst Lenworth D. Gordon. Andersen uses NT to support selected applications and runs Microsoft SQL Server on three servers, including a dual-processor Pentium system with a 15G-byte mirrored database.

Scores

Windows 95: Gordon gave Windows 95 B's for half the criteria. He gave A's in functionality and ease of installation and C's in stability and multitasking.

Windows NT: Gordon awarded NT almost straight A's — the one exception being a B in PC compatibility.

Wish list

Windows 95: "Microsoft Plus Pack should be standard for Win 95."

Windows NT: Add the Windows 95 interface to NT. Bring all the Windows 95 Plug and Play technology over to NT.

Advice to peers

Windows 95: "If you're going to be using all 16-bit applications, you won't see performance gains."

Windows NT: Expect applications to be slightly slower but more stable because every application gets its own virtual machine. Try to go with just 32-bit applications, if possible. Plan on 20M bytes of memory for workstations and at least 32M bytes per server.

Snapshots

intoch to Intel-based hardware. About 25% of users run Windows 95, and managers expect it to be on 90% of the desktops within two years. The manager gave Windows 95 and NT all A's and B's, saying he wished Windows 95 required less memory.

NT taking over

A financial services company

The firm has 300 workstations testing Windows 95, 100 servers running NT and 2,000 desktop systems running NT Workstation. The company sees itself standardized on NT in two years. Both products got mostly B's, with NT picking up a few A's. The manager warns that IS must take control of Windows 95 installations and that NT requires plenty of up-front planning.

User-friendly Win 95

A software company

A strong Unix house, this firm also is testing Windows 95 and NT for product development. The manager said Plug and Play hardware is great and that Windows 95 is very user-friendly. Yet he found serious problems with Windows 95's security features, particularly the ability to override password security by clicking on "cancel." It may move to NT Workstation as a desktop platform, but that may depend on what Microsoft does with its next-generation operating system, Cairo.

Two classes of users

A technical support company

Windows 95 supports almost half the company's users. It has been installed on a variety of platforms. NT is being used for selected applications. In the next two years, low-end users will move from Windows 3.1 to Windows 95, but higher-end users will go to NT Workstation. Windows 95 got mostly B's and C's but fell to a D on multitasking. NT got all A's and B's. "I wish [Windows 95] shipped with 16 meg memory in the package."

BackOffice on the back burner

By Kevin Burden

Many companies agree that Microsoft Corp.'s BackOffice application suite is full of powerful tools. But users have no desire to experiment with all of them at the same time.

BackOffice is broken up as soon as it leaves the box, according to 20 managers surveyed for *Computerworld*. Users implement the one or two pieces that lured them to the suite, and the other pieces might be added to a future to-do list.

"I'm concerned about downing a server or causing more problems than I can solve," says one manager who uses Exchange and SQL Server. Those applications are the most popular with the users interviewed. The fact is, many companies stretch their resources just to implement Windows 95 and Windows NT. Both of those systems have to be installed before BackOffice. "We're looking at [BackOffice], but we won't touch it until we finish the [Windows] 95 and NT project. Our resources are tapped," a user at a financial services company says.

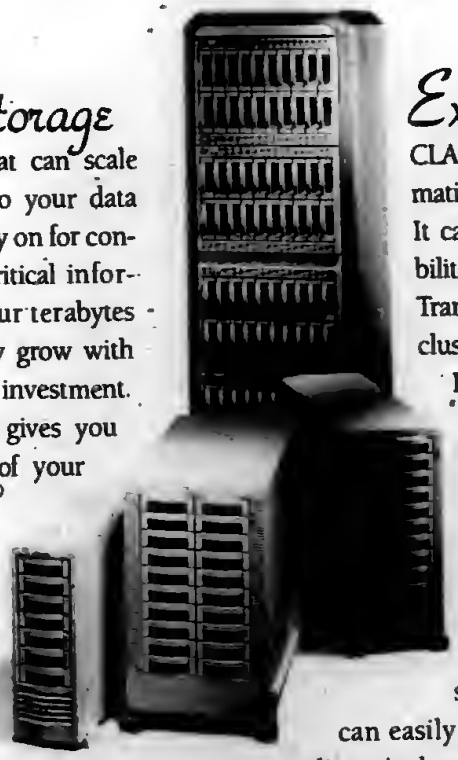
On the brighter side, users praised the applications they do use. Exchange, the mail/groupware client, is expected to deliver for large companies what Microsoft Mail and Lotus Development Corp.'s CC:Mail can't. "These products work but not with 4,000 users trying to communicate nationwide," one user says. Exchange's full potential can't be tested until its server portion is released, but users say they are encouraged by what they've seen so far.

The Exchange challenge is training, users say. A mail system is often the one application common to all users companywide. Switching to Exchange means retraining an entire staff, not just a business unit or department. "But that's what progress is all about," says Paul Flanagan, vice president of information systems at Christian Broadcasting Network in Virginia Beach, Va. Flanagan anticipates a long road ahead as he retrains 900 CC:Mail users.

System Management Server is also seeing heavy use by some companies; others say it will be the last application they look at. "It just looks like a giant product that is much more complicated than the operating system itself," one manager says.

Burden is *Computerworld*'s senior researcher, Firing Line/Scorecard.

THINKING *Enterprise* STORAGE



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Ignore the convergence confusion

By Michael Gartenberg and Beth Enslow

As information systems organizations determine how appropriate Microsoft's Windows 95 and Windows NT are for their firms, some are falling into the convergence model trap. The trap: believing an enterprise is better off deploying NT at the desktop because Microsoft will soon converge NT and Windows 95 into a single, unified operating system.

This conclusion is a mistake. In Gartner Group's opinion, for at least the next five years, Microsoft will offer two distinctly different operating systems: one for power users and demanding enterprise applications, and one for general business productivity users. Today, NT fills the higher-end role with its rugged design, portable microkernel and high-end security features. Windows 95 is positioned as the general-purpose system.

As these operating systems evolve, pieces of the higher-end version will be embedded into the general-purpose system. For example, within five years, the NT microkernel will become part of the Windows 95 operating system. Similarly, some features that appear in the broad-based operating system will migrate to the higher-end operating system. For example, the new Explorer GUI that first appeared in Windows 95 is being added to NT 4.0. This will let firms that want to standardize on Microsoft products use a common GUI.

But this doesn't mean the operating systems will converge. The higher-level operating system will continue to mature and develop, showcasing new features such as true object-oriented technology. Features will trickle down from the high-end system to the general-purpose one, but only in areas that make sense. For example, it's unlikely that NT's C2 security feature will be embedded in a future version of Windows 95. Thus, even though the operating systems' technology eventually will merge to some extent, the operating systems will still be branded and sold as specific products for different markets.

Companies should deploy the appropriate operating system for their environment based on user needs and general enterprise requirements, not because of a misconception that Microsoft is planning to merge NT and Windows 95. Microsoft will continue to maintain two different desktop operating systems, and the higher-end operating system will always require a steeper hardware investment than the mainstream operating system and will require more effort to deploy.

For most companies, what is drawing them to NT doesn't outweigh the pain of getting there. Enterprises migrating to NT face increased memory requirements, incompatibility with 16-bit Windows and DOS applications, a shortage of device drivers; an awkward mobile computing environment, poor PC card support and no Plug and Play support at all.

If a company can ease some of the transition pain, then NT delivers several benefits, including smooth multitasking, full memory protection and architectural robustness. Even under these circumstances, however, companies should delay volume desktop deployment until NT 4.0, which will have the Explorer GUI and PC card support. NT 4.0, now in beta testing, will deliver an additional bonus: a total cost of ownership that Gartner Group projects will be about $146 per user per year lower than that of Windows 95. In a 2,500-user installation, this adds up to a $364,000 annual advantage for NT. ■

Gartenberg is a vice president and research director in the Distributed Server, Desktop and Mobile group at Gartner Group, Inc. in Stamford, Conn. Enslow is a Gartner Group business technology writer.

Computer memory chips

When giant steps make sense

Managers find savings by tying OS migration to hardware buys

It may be a bit like holding off on the new tires, muffler and paint job because you know it's almost time for a new car. While some users are installing Windows 95 and Windows NT on existing equipment — perhaps adding some memory or a new disk drive — the most common scenario is to migrate to the current Microsoft operating systems only as part of an overall system replacement.

When asked to quantify the cost of migrating to Windows 95 and NT, most of the 20 managers surveyed said they couldn't put a hard figure on it. However, a few patterns — and some broad discrepancies — did emerge. Those managers who estimated time and hardware costs ahead of time reported few great surprises.

IS staff time

Based on what the surveyed managers found, you can expect to devote one to two hours of IS staff time per user when implementing Windows 95 or NT. A handful of sites ran into the three- to five- hour range, with managers sometimes blaming bugs and compatibility problems. The most extreme time investments came on the part of one user who said his staff spent eight hours per user on Windows 95 and 15 hours per user on NT. One user broke out his estimates by noting that a CD-ROM installation of Windows 95 took less than an hour, while a diskette-based installation took two hours.

Hardware

Memory upgrades proved to be one of the biggest challenges for users. On the hardware side, Intel Corp. 486 machines with 8M bytes of memory appear to be marginal for Windows 95. And many managers say they upgraded to 12M or 16M bytes. They typically recommended 1G-byte hard drives. Managers say adding 4M bytes of memory cost in the $150 to $200 range and that disk drive upgrades cost about $300. The minimum system for Windows NT, according to user experiences, is a 16M-byte, 66-MHz 486 system with 200M bytes of free disk space, although most recommended Intel Pentium servers with 2G bytes of disk and 24M to 32M bytes of memory.

Those users who seemed happiest with their migrations say they had gone straight to new hardware platforms when installing Windows 95 and NT, either as part of a new project or under a scheduled system replacement plan.

Costs for new systems ranged from $2,000 to $4,000 for Windows 95 and NT Workstation machines and from $4,000 to $10,000 for "NT-ready" servers.

On-line info

Check out the Microsoft World Wide Web site (**http://www.microsoft.com**). It includes support and developer information as well as information about business partners who can assist with implementation.

Read what other users say in the more than 20 newsgroups listed under **comp.os.ms-windows**. Similar forums, some run by Microsoft, are on the pay services such as CompuServe, America Online and Prodigy. One example of a pay service forum is the Windows User Group Network's Wugnet Windows Users Forum on CompuServe.

Books

Windows 95 Made Easy: The Basics and Beyond
By Tom Sheldon; Osborne/McGraw-Hill; Berkeley, Calif.; $27.95; (800) 822-8158

Windows NT: The Complete Reference
By Allen L. Wyatt; Osborne/McGraw-Hill; Berkeley, Calif.; $29.95; (800) 722-4726

— Compiled by Laura Hunt

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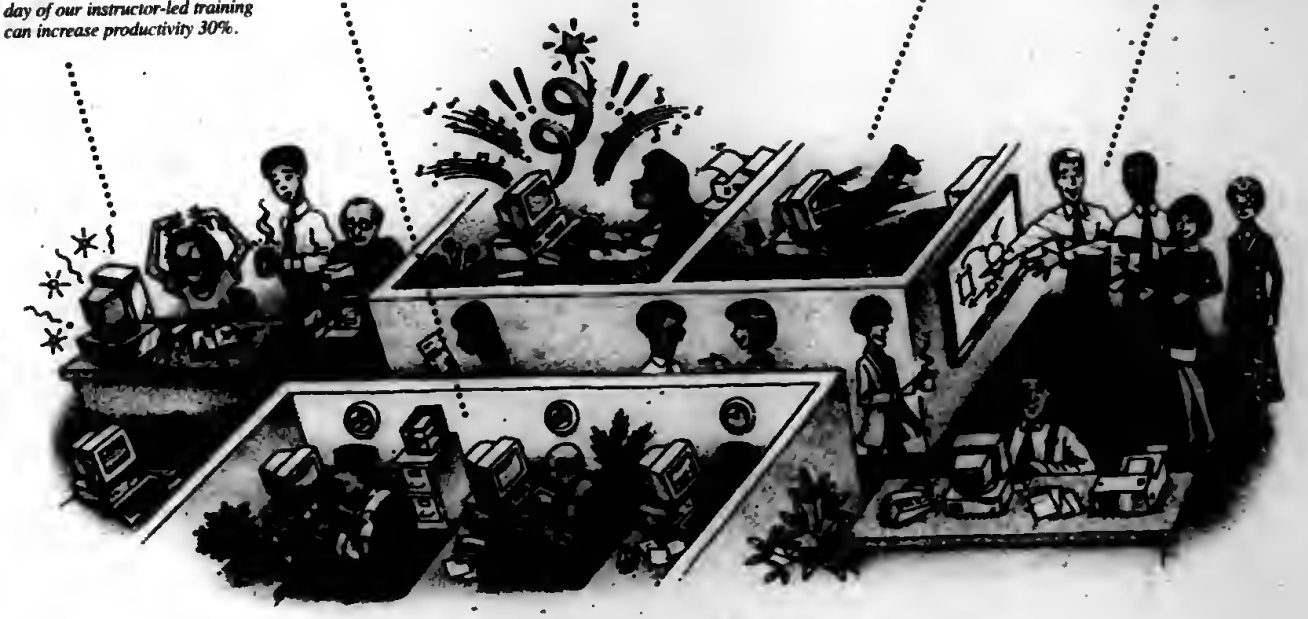

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12. Vice President, Asst. VP
13. Treasurer,Controller Financial Officer
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) Nix/Telesp
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90. Other Titled Personnel

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(d) Unix (h) Nix/Telesp
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No

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Fave WEB SITES

Fou[illegible] coolest, hottest, most useful place[illegible] and on the Web — according to [illegible] extremely unscientific poll of [illegible] readers

By Daniel P. Dern

What World Wide Web sites do IS [illegible]ation systems pros like best for business or personal pur[illegible]? With bazillions of Web sites out there, what makes an IS person choose one and pass by the rest? *Computerworld* asked its readers to nominate their favorite Web sites. From those, our editors picked four. We looked for value provided by densely packed content — you know, stuff that would save users time or point them to additional information.

Dern (dern@world.std.com, [illegible]) is an Internet author and analyst in Newton Centre, Mass. Each Web site nominator will receive Quarterdeck Office Systems, Inc.'s InternetSuite, which includes [illegible] and offers mail, remote log-in and file transfer from the Internet.

Three of the readers' four picks are also very easy to use — they can be navigated easily even with text-only browsers. They don't have a lot of unnecessary and time-consuming graphics. This proves again that useful Web sites, like any other resource, don't need a pretty face or other techno-intensive features to merit repeat visits.

What all the responses show is that IS professionals are increasingly turning to the Web as a place to get information they care about.

Fave Web Sites, page 98

CONTINUED FROM PAGE 97

The Ultimate Online Music Store (http://www.musicblvd.com)

This site delivers on its name by offering on-line visitors the ability to search and buy music on CD or cassette. It is indeed a tempting place to spend money.

Nominated by John Pagakis, a technical specialist at The Options Clearing Corp.

"I listen to a lot of music — I'm a former professional rock guitarist — but I don't have time to go to as many music stores as I'd like. I'm in front of my computer at home a lot more than I'm out in stores. This site lets me look for and buy things I want quickly — and perhaps a bit too painlessly.

"I have been using this service to replace a lot of my old albums — a perfect application because I can look through all that old vinyl in the basement, spot three or four that I haven't heard in a while and go upstairs to see if I can order them. I can't do that at a music store.

"Once they have your credit-card number (you can phone it in if you don't want it going over the 'net), ordering is as easy as point and click. According to my Visa card, I make a purchase there about twice a month.

"This music store is impressive; I have found CDs in its searchable database of 145,000 titles (**http://www.musicblvd.com/cgi-bin/tw/0_0_/md/template/mainstr.txt**) that I have been trying to find for years and have seen nowhere else — like the first album by Starcastle, a Yes-soundalike band. It's a very slick-looking Web site, too — someone over there *knows* HTML. The search engine is very helpful and makes it easy to choose a genre or search the whole database.

"This site allows you to view things in three modes: full graphics (beautiful and slow), slender graphics (just as beautiful, with acceptable speeds) or text-only (presumably for the Unix nerds). Most sites only offer graphics or no graphics.

"As for the search engine, its speed is impressive. Even when you are searching all music, response time is quick. Your search choices are impressive, too. Via check boxes you can search all music or limit the search to certain genres. Within that, you can enter other criteria such as artist, album name, song or record label. You don't have to know exactly what you're looking for either. If you enter 'Seal' you will get bullet points for Seal, Sealand Poets, Seals & Croft, S. F. Seals, Navy Seals, Son Seals and Dan Seals (**http://mb0. musicblvd.com/cgi-bin/tw/1923825444166_49_63098**). You do have to know how to spell; a search for 'Firesign Theater' turns up nothing.

"Plus, their customer service support has been excellent. If a search comes up empty, the Web page lets me send an electronic-mail query to them. They typically get back within a day or so. They may report they don't have something, but it's always a knowledgeable reply. They may suggest, for instance, another album with most of the same tracks.

"Another thing this site does is make recommendations. When you get information on an album you like, very often at the bottom of the page they'll say, 'If you like this artist, you may like these, too,' followed by links to one or more artists.

"You don't get features like this out of a company whose only motivation is profit. Music Boulevard knows enough about what they sell to make these kinds of extrapolations.

"I expect to see more companies adding on-line access like this ... It makes it so darn easy to buy things."

The Investors Edge (http://www.irnet.com)

Companies pay to have their investor relations materials made available on this site. For users, it's a popular financial information source enhanced by the stocks and mutual funds price data.

Nominated by John Connolly, a senior analyst at Sybase, Inc.

"The Investors Edge Web site is a great page. I use it to track my stocks and the progress of the mutual funds in my 401(k) plan. The site also has a nice feature, its 'most active' page, that shows the stock gainers and losers.

"The stock pages are nicely laid out for users — you can see the charts and addresses all in one place as opposed to seeing only a stock's symbol and price. It also has links so you can get telephone numbers and addresses quickly. Other excellent links include being able to get a stock quote and then go to links to other companies in that industry.

"For example, I can click on the auto industry from the General Motors stock page (**http://server1.irnet.com/scripts/ethos.exe?WWW+p_IEStockInfo+'GM'**) and get a list of all the companies in the auto industry. I can also hotlink to GM's Web site from the stock page.

"It's also very easy to access; it doesn't require a log-in or authentication to get quotes.

"Because it doesn't use graphics extensively, as other financial sites do, each page doesn't take forever to download.

"I usually check [the page] about once a day, but if there's something I'm thinking of buying or selling, I can even leave the window running in the background on my screen. The information automatically refreshes at regular intervals, and it only takes me a few seconds during my work breaks to click it to the front and check.

I also use the site to pull information about my stocks into Quicken [Intuit, Inc.'s personal finance management package]. There's an option I can click on that generates a spreadsheet I can download as a file and then import into Quicken."

Fave Web Sites, *page 100*

Microsoft

CONTINUED FROM PAGE 98

The city of Palo Alto (http://www.city.palo-alto.ca.us)

Started by Digital Equipment Corp.'s Palo Alto, Calif., office, the city's Web site offers a wide range of information, including clickable public transit maps, searchable restaurant information, police bulletins and even a directory of city government by face.

Nominated by Mike Bowlin, data processing manager at the Public Works Department of the county of Los Angeles

"As someone planning his own department's Web page, Palo Alto's site provides me with ongoing ideas and inspiration. I check it monthly because I'm writing a report for our department concerning how and why we should have an Internet presence. (I'm also looking at other government Web pages, of course.)

"One of the objectives of government pages is to provide outreach to the citizens. This enables them to access government media, information and services. The city of Palo Alto's Web site is by far the best example of community services outreach.

"For example, if you look at the top-level screen, you see about 20 smart icons that are pointers to various areas. The site's creators have condensed the organization so that a user can get to information directly, without going through an unnecessary menu hierarchy.

"If I was a resident of Palo Alto, I would use the flood zone and community services information on a regular basis. You can do things such as look up a flood zone by address, as well as access information on Palo Alto restaurants by type or look at a map of downtown restaurants."

Gordon & Glickson P.C. (http://www.ggtech.com)

Increasingly, companies such as Gordon & Glickson are using Web sites to make their publications, schedules, contact information and other materials available to a wide audience. This site uses — arguably overuses — proprietary technologies such as extensions for navigation and presentation from Netscape Communications Corp. It also uses document formats in Adobe Systems, Inc.'s Acrobat — despite the fact that this reader software is not available for all platforms.

Nominated by Robert Grosshandler, president, Grosshandler Ventures, Inc., Intercast, LLC

"Gordon & Glickson handles many of my company's legal affairs. [Intercast provides wireless and wired interactive information such as breaking news stories and databases for local restaurants that can be queried.]

"I visit the site once a month or more to find out what's new in the field of intellectual property and to see if there are any changes that would impact what we do. I also connect to learn more about partners or associates in the firm with whom I'm unfamiliar.

"Whenever our law firm is involved in some activity on our behalf, our credibility is enhanced by the firm's mastery of the technology. Things such as their extensive use of cross-linking navigational features on the opening screen and the creative use of graphics make their site stand apart from most other business pages.

"On a technological level, the obvious enhancement is the server-push technology, which lets the server drive the presentation in their opening sequence of philosophy statements and images. (Note that Netscape 1.1 or higher is required to view this sequence. However, the page is smart enough to skip the sequence if it detects that your browser can't display it.)

"Some of the other interesting technological features are somewhat less obvious. For example, when requesting a hard copy of an article or publication (http://www.ggtech.com/publist.html), a form comes up that identifies the document you have requested and asks for your name and address. Unlike most Web sites, this one remembers your address when you request the next document. Technology takes over a tedious task without the user even noticing." ■

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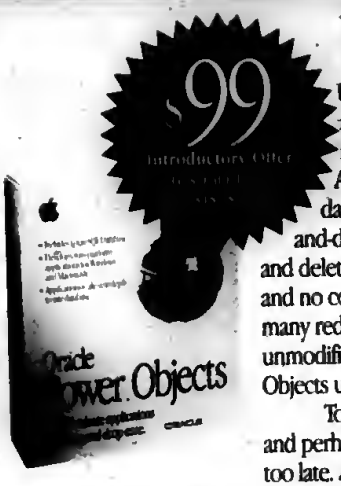

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Money & Mania in Financial Services

Opportunity sizzles in financial services. But these jobs aren't for the faint of heart.

BY LYNN HABER

NEW YORK is a place like no other. It's also the crown jewel of information systems employment in the financial services industry. And it's hot.

But New York isn't the only game around. Financial institutions in Boston, Chicago, San Francisco, Dallas, Los Angeles and Charlotte, N.C., are hotbeds of activity for IS hiring.

At State Street Bank & Trust Co. in Boston, 15% of all hires on an annual basis are IS professionals, according to Kelly Lane, vice president of staffing at the bank. They include programmers, developers, network administrators and managers.

Similarly, Price Waterhouse's IS practice has been growing 20% annually. The company hired 1,200 IS professionals in the last fiscal year, according to Fran Engoron, senior partner for intellectual capital at Price Waterhouse in New York.

Client/server technology does the most to fuel the demand for IS talent in the financial services sector.

But an IS career in financial services isn't for the fainthearted. The industry leads the way in the implementation of new technologies, and it's a very talent-driven market. That means financial institutions look for IS professionals who have the skills to hit the ground running.

"From a technical perspective, demand for these jobs is high, supply is short," says Greg Scileppi, executive director at RHI Consulting, Inc., a division of Robert Half International, Inc. in New York.

A few years ago, top-notch talent was the phrase used to define anyone with a few years of experience with leading-edge technology. Today, industry players look for experience with particular applications that are relevant to financial services, such as derivatives, equities, brokerage and mortgaging.

"We put a premium on anyone with SAP client/server application experience," Engoron says. "IS professionals definitely increase their market value if they have specific experience with advanced application tools and presentation tools."

The IS professionals in demand are those with skills in relational database technology, X Window System and front-end graphical user interface tools, such as Powersoft Corp.'s PowerBuilder. If you're a programmer, you must

Financial services, *page 104*

What financial services pays

IS professionals with client/server skills in financial services environments can expect the following salaries:

	New York	San Jose	Austin	Washington	Boston	Chicago
Systems administrator (Sun/Solaris/AIX/HP-UX/heterogeneous)	$55,000	$54,000	$55,000	$47,000	$44,000	$45,000
C++ application developer	$57,000	$50,000	$46,000	$52,000	$45,000	$46,000
Database application programmer (Sybase/Oracle/Informix/Notes)	$55,000	$53,000	$48,000	$50,000	$47,000	$48,000

1995 salary survey of financial services market by Pencom Technical Recruiting, a division of Pencom Systems Inc., Austin, Texas

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HEWLETT PACKARD

Macs, Managing and Motivation

Experienced Mac professionals can offer a lot as IS managers. The key to success is attitude.

BY LINDA WILSON

As a groupware consultant in the 1980s, Stephen Elop worked primarily in the Macintosh environment. But in 1990, Elop's firm, Soma Corp. in Toronto, switched to Notes and Windows.

Gaining mainstream technology experience turned out to be a smart long-term career move. Elop now is vice president of systems at Boston Market in Golden, Colo.

If you're a Macintosh developer watching the fortunes of Apple Computer, Inc. slide, you may be thinking that Elop was on the right track. You, too, would like to move into the information systems mainstream with an eye toward moving up the management ranks. But how? What skills or training, if any, do you need?

Multifaceted employees

Recruiters and managers of IS departments agree that technical skills and so-called softer skills are both important. The degree to which soft skills are more important than technical skills, or vice versa, depends on how far up the management ranks you go. The higher up the ladder you go, the more important softer skills are.

"At higher levels, it becomes more about managing and motivating and directing rather than, 'I have a divide-by-zero error. Why is it happening?'" Elop says.

Still, some knowledge of popular technology is important at any level.

"As you move into management, you need to have a technical base behind you," says Bart Weisman, vice president of RHI Consulting, Inc., a contract employment firm and a division of Robert Half International, Inc. in Arlington, Va. At a minimum, "you need to be familiar with Windows and Unix," he says.

Weisman suggests taking courses on your own or buying software and playing with it at home. If possible, you also might seek out a Windows or Unix developer's position where you work.

Knowledge about other operating systems is important, but don't forget to sell the skills you already have.

Because of your Macintosh background, you've gained considerable experience designing effective graphical user interfaces.

You're also familiar with object-oriented programming. These are hot skills today, and developers with PC backgrounds typically don't have as much experience in these areas as Macintosh developers.

"People coming out of the Mac world are not coming out without anything to show," Elop says.

Another career-advancing tactic might be to learn a bit about object-oriented tools such as Borland International, Inc.'s Delphi.

Boston Market is "just beginning to use the tool for a sample project, and no one has experience using it," Elop says.

Besides technology experience, soft skills are vitally important. Chief among them is a positive attitude. One thing to check at the door of a potential employer is a "Macintosh is better than Windows" attitude.

Marketing your management potential

Develop the following skills if you want to move into mainstream IS management:

- Work cooperatively with others.
- Show a positive, can-do attitude—not a Mac-is-better-than-Windows attitude.
- Get experience managing projects, people, budgets.
- Understand how technology can be applied to further business goals.
- Be able to define user requirements in business—not technical—terms.
- Know dominant technologies, such as Windows and Unix. Also helpful: Sybase, Oracle, Novell and Notes.

"There definitely are a few out there that have an arrogance. Having an attitude that says 'I am better than you' is a definite turnoff," says Hugh Naughton, former group manager of information technology at the Gas Research Institute and president of NuPost International, Inc. in Westchester, Ill.

Elop agrees, though he admits it's a difficult attitude to suppress.

"I went through some of that Mac bigotry myself. It is frustrating because the mainstream has taken so long to catch up," he says.

Besides attitude, other soft skills are important. Ken Daubenspeck, a Chicago-based recruiter who works with high-level IS candidates, says his clients rarely talk about technical skills — they aren't that important at the highest levels. But the softer skills are.

Daubenspeck's clients want to know whether management candidates understand how to use technology to solve business problems and further strategic goals.

"Get underneath the technology, and understand how it all fits together with the business," he advises.

But don't let this long list of skills requirements dampen your enthusiasm.

Switching from the Macintosh environment to mainstream IS management can be done. Just ask Elop. You also might take heart from Naughton's experience as an employer. While at the Gas Research Institute, he hired several Macintosh developers for mainstream positions.

One candidate, who was hired for a PC support position, is now responsible for network administration. ■

Wilson is a freelance writer in Glen Ellyn, Ill.

Financial services

CONTINUED FROM PAGE 103

know Microsoft Corp.'s Visual Basic and C++. Database application programmers and database administrators who have Sybase and Oracle experience are also in high demand.

For mainframe talent, the demand is for maintaining legacy systems and applications as firms migrate to client/server.

There's also a tremendous need for network talent to manage and administer large, distributed, heterogeneous networks with Unix, Windows 95 and Windows NT.

"Financial institutions are always looking for network professionals to make sure the systems are up and running, to install and roll out new software, to make sure there are no glitches, to monitor network performance and solve problems," says Stephen Markman, vice president at the New York office of Pencom Systems, Inc., a national technical recruitment firm.

Barry Wolmuth

"We put a premium on anyone with SAP client/server application experience. IS professionals definitely increase their market value if they have specific experience with advanced application tools and presentation tools."

— Fran Engoron, senior partner, Price Waterhouse

Novell, Inc.'s Certified NetWare Engineer certification continues to carry a lot of weight in the industry. But close on its heels is demand for Windows NT expertise, which industry participants say is quickly picking up speed.

Network professionals who have expertise in network management or electronic commerce and the Internet are in high demand at Primerica Financial in Atlanta, says Jack Boland, executive vice president and chief information officer.

"It's difficult to find high-level network managers who are fluent in protocols, LAN/WAN design and implementation," he says.

The financial services industry is a pressure cooker no matter where you go. But New York is a special case for IS individuals who are looking for a challenge; some might say it's the place for those who are willing to sign away their lives. If you're willing to live with your beeper at your side, take middle-of-the-night telephone calls and be constantly on the go, you can demand an average salary premium of 20% to 25%, says Alan Johnson, managing director at Johnson Associates, a compensation consulting firm in New York.

The application of IS technology in the financial industry gives its players a competitive edge. Every project is mission-critical, and every IS employee has to be sharp. Geography aside, compensation comes down to institution, project and the technology being applied. ■

Haber is a freelance writer in Norwell, Mass.

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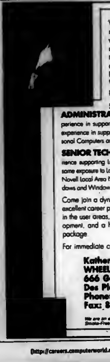
Multiple openings exist for a Systems Analyst for a software consulting firm. Duties include: Analysis, Design, Development & Enhancement of Financial Information System and provide technical support on software development, Process & Data Flow Design, Data Modeling, Preparation of Functional Specification & Database Design using ADW/IEW Case Tools, Development & Total Testing of the system in IBM Mainframe Environment using CICS, DB2, VSAM, SDF, TELON, REXX, CLIST, LIBRARIAN, INTERTEST, TSO, ISPF AND MVS, ESA, Platinum Utilities PPA, PRF. Requires a Bachelors Degree in Computer Science. Requires two years experience in the job offered or two years experience as a Systems Analyst to include experience in the following Hardware, Software and Languages: ADW/IEW Case Tools, CICS, DB2, SDF, REXX, ISPF, and MVS/ESA. Salary is $46,000.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415 Detroit, MI 48202. Ref. 6603-96. Employer paid ad.

Consultant - Technical Support: Provides technical and consulting support for clients of the company in the following areas: Server and Network administration; LAN - Token Ring and Ethernet Network Support; Windows PC and Macintosh troubleshooting; Systems and Application Software support and Training; Lotus Notes Technical Support; Develop application programs as needed. Knowledge or work experience in Novell Network; C, Cobol, Visual Basic, Hypertalk and Toolbook programming languages; Apple System 7.x, IBM DB2, Microsoft Windows, Windows 95 and UNIX operating systems; Ethernet, Internet, TCP/IP, token-ring and client/server communication protocols. Bachelor degree in Computer Science or Management Information System. One year work experience in the area of job offered. $36,576 per year. 40 hours per week. Equal opportunity employer. Application by resume. Application will be accepted up to 30 days after the date of publication. Send resume to Bernie Childerston, P.O. Box 94600, Lincoln, NE 68509-4600. Refer in job order # NE 0157177



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SENIOR TECHNICAL SUPPORT: 2+ years experience supporting Lotus Notes and Lotus cc:Mail along with some exposure to Lotus Organizer. Experience also required in Novell Local Area Networks, Microsoft products such as Windows and Windows/NT, and support of Personal Computers.

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Database Design Analyst: Will analyze, specify, design, implement, and test a PC-LAN based Client/Server relational database system. Will use Visual Basic, MS Access and other third party development tools to adapt the computer system to individual user requirements by designing and implementing appropriate Graphic User Interfaces on either Windows or Windows for Workgroups platform. Will perform documentation using Lotus Notes. Will perform data conversion from an HP 3000 MPE operation system to the new LAN based client/server system. Will develop appropriate conversion utilities to insure accurate system integration without loss of data. Will design, plan and build an information management software system inclusive in conjunction with system conversion process. Requires M.S. degree in Information Systems or Computer Science. Education to include completion of one course in: Software Reliability, Software Quality Management, Graphic User Interface, and Database Technologies. Education to include completion of either a M.S. thesis or six months as a Graduate Assistant in which the individual implemented a client server information system using Visual Basic including building of appropriate Graphic User Interfaces. Hours: 8:00 a.m. - 5:00 p.m. 35 hours per week at $39,000 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send resume to: Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Reference #V-IL 14185-A. An Employer Paid Ad. No Calls. Send 2 copies of both resume and cover letter.

Multiple openings exist for a Senior Programmer Analyst for a software consulting firm. Duties include: Lead Analysis and Design of requirements and applications involving development, implementation and documentation of an integrated system. To include: Development of a full range of client-server application using Designer 2000 and Developer 2000, extensive design in ORACLE CASE. Data Modeling identification. Technical Support for Developing and Integrated System Testing and implementing the enterprise level client-server integrated system on Wide Area Network. Technical support to include the following hardware, software and languages: DEC ALPHA server on VMS V6.1 connected with 486s as clients on WAN. Designer 2000 on windows 3.1, Developer 2000 with SQL*FORMS, SQL*REPORTS, PL/SQL, PRO*C, UNIX, VMS Operating Systems. Based Hardware like HP9000, IBM RS6000, ORACLE RDBMS, DEC ALPHA in Network, ORACLE CASE, SQR AND PRO*C. Requires a Bachelors Degree in Computer Science. Requires two years experience in the job offered or two years experience as a Software Consultant to include experience in the following hardware, software and languages: ORACLE RDBMS, HP9000, IBM RS600, PRO*C, ORACLE CASE, SQL*FORMS, SQL*RPT, PL/SQL and UNIX. Salary is $57,000.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415, Detroit, MI 48202. Ref. #34896. Employer paid ad.

Programmer/Analyst (Eng & Scientific): 40hrs/wk, 8-5, $40,000/yr. Relational data modeling, design & implementation under SYBASE environment. Front-end user interface implementation with MS Windows & Sybase Open Client/DB libraries. X-Windows Motif implementation with C. Data communication application development with TCP/IP. PC database programming with NOVELL file server. Min reqs: MS in Computer Science, 1 yr in carrying out those duties set forth in the job offered or 1 yr in data modeling, design & implementation in a Sybase environment & in writing stored procedures & C programs with Open Client DB libraries & in developing front end applications in MS Windows. Past writing of a program using X-Window Motif & TCP/IP protocols. Apply at the Texas Employment Commission, Dallas, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O. #TX7504293. Ad Paid by an Equal Opportunity Employer.

Consulting Analyst (Database Analyst): Will design, modify, and develop a Sybase relational database in a NOVELL LAN environment using SQL and 4GL. Design and develop a translator in an IBM-PC (Windows) and HP9000 (UNIX and TCP/IP) platforms using C/C++/Visual Basic. Will perform system interface programming using C-To-Mainframe tools. Create graphic user interfaces based on user requirements. Modify database as required by end users and ensure proper data flow through networks. Insure system integration. Requires M.S. degree in Computer Science. Also requires one year experience in the job to be performed or one year experience as a Programmer. If experience in related field, entire experience must include the design, development, and modification of a Sybase or INFORMIX database management system including coding in SQL and 4GL. Education to include completion of a project in each of the following: (1) development of applications that create graphic user interface based on end user requirements in an X-Window Motif environment (2) development of a relational database system in INFORMIX using 4GL. Hours: 8:00 a.m. - 5:00 p.m. 40 hours per week at $40,500 per year salary. Please send resume with social security number to: Indiana Department of Workforce Development, 10 N Senate Ave., Indianapolis, IN 46204-2277, Attention: Gene R. Replogle, I.D. # 3379534. An Employer Paid Ad.

Systems Analyst (2 openings) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to client needs, analyze, design & develop complex systems requirements & computer software for clients EDP systems: code specifications using C, test code & implement in enhancements of Worker's compensation software program, customize worker's comp. software as per users requirements & system test support earlier version of worker's comp program by fixing software bugs in production system on IBM PC, Mainframe Computer & LAN using C, DOS, Windows, Codeview Debugger, & LAN Manager. Reqs. Masters in Comp. Sci., Computer, Electrical or Electronics Engg., Systems Analysis, Comp. Info Systems, Math or equiv. in ed. & exp. 2 yrs. exp in job offered or 2 yrs related exp such as Systems Analyst, Programmer, Software Engineer or Consultant. Related exp must include design & development of software & technical support using C, ALGOL, Codeview Debugger, MS-DOS & Windows on IBM mainframes, IBM PC & LAN. $48,500/yr., 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #33796 "Employer Paid Ad"

Associate Developmental Engineer Software: Define design concepts and select parts or outline programs structures; review with other engineers for technical content; build prototypes or develop program; coordinate design ideas with internal contacts. Provide product support; evaluate problems and process change to correct problem; provide technical support to internal contacts. Define new parts and complete request input for new drawings; review documents for technical content; purchase supplies to support product development; prepare progress reports. Salary: $34,600 year /40 hr week. Requirements: B.S. degree in Computer Science or Electrical Engineering. Academic course work in the following areas must be demonstrated: Probability & Statistics, Optimization, Programming Systems and Languages, Processing Systems and Structures, Operating Systems, Computer Communications (networks), Compilers, Artificial Intelligence, Technical Writing, O.O.P. and C++. Resumes to: Mrs. Jimmie Gaston, P.O. Box 339, Florissant, MO 63032. Refer to job order number 349148. Applicants must demonstrate that they can be legally employed on a permanent basis in the United States.

Multiple openings exist for a Systems Analyst for a software consulting firm. Duties include: Analyze Design and Develop Computer Software Application, Provide Quality Assurance on Project, Carry out System Testing & Trouble Shooting, Enhance Existing Programs with New Applications, Work with Concurrent/Parallel Programming Issues. Technical Support Provided will be for Design of Application on IBM 3090 MAINFRAME & MVS/XA Operation System using COBOL II, OS/VS COBOL, IMS DB/DC, DB2, VM/ESA, REXX, ORACLE, FOCUS, CICS/VS, DOS/VSE, VSAM, TSO, JCL'S XPEDITOR, PANVALET, MF COBOL II MICRO FOCUS WORKBENCH, XDB and OS2. Requires a Bachelors Degree in Computer Science. Requires two years experience in the job offered or two years experience as a Programmer Analyst to include experience in CICS/VS, VSAM, JCL, REXX, FOCUS, OS/VS COBOL, COBOL II AND DOS/VSE. Salary is $46,500.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415, Detroit, MI 48202. Ref. #20496. Employer paid ad.

Network Administrator; 40 hrs./wk., 8 am-5 pm; $41,000/yr. Job requires a Bachelor's degree in Computer Engineering & 6 mos. experience in Job Offered or as a Network Administrator. Job also reqs., 1) Experience administering multi-protocol networks, 2) Exp. installing & configuring router; 3) Exp. installing &/or troubleshooting PC system & network hardware; & 4) Exp. programming in C++ & Database. Exp. reqs. may be met concurrently during the same 6-mo. period. Job duties: Develop & design wide area network (WAN) & local area network (LAN). Provide network support to stand alone business units, site users & local users. Integrate multi-protocol (TCP/IP, IPX/SPX, NetBUEI) & multi-LAN platform (UNIX, Novell, Microsoft NT, Windows for Workgroup) into an enterprise network. Evaluate & integrate service providers & products for WAN, LAN, computing, & software systems. Provide Support for hardware/software installation & trouble-shooting. Develop/debug software as needed. Program in C/C++ or for Databases for both UNIX & Windows environment, as needed. Qualified applicants should send resume & verification of reqs. to: 7310 Woodward, Rm. 415, Detroit, MI 48202. Ref. #17696. Employer Paid Ad.

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Programmer Analyst - Plan, develop, test & document computer programs applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time required, compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; analyze, develop, test & maintain batch & on-line programs & using each of the following: IBM 3090, MVS/ESA, DB2, CICS, SQL, JCL, VS COBOL & JES2, TSO/ISPF, Abend-Aid, QMF, SPUFI, Xpediter & Easytrieve; Reqs: Bachelor's in Computer Science or Computing & Information Science & 1 year exp. in job offered or 1 yr. exp. in related occup. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Consultant. Related experience which included developing & maintaining batch & on-line programs & using each of the following: IBM 3090 MVS/ESA, DB2, CICS, SQL, JCL, VS COBOL II & JES2. $43,680/yr., 40 hrs/wk, 8a-5p, M-F. Send resume to 7310 Woodward Ave., Rm 415, Detroit, MI 48202 & including ref. #200-96. "Employer Paid Ad."

SOFTWARE ENGINEER/SENIOR STAFF ANALYST: Job duties include: Identify user requirements in mainframe & PC environments, including client/server. Design, develop, implement, and maintain software applications. Evaluate user requests for enhancements and modifications to existing applications, analyze and develop specifications to determine feasibility, cost, and time required to implement, and determine compatibility with current system. Consult with user to clarify application objectives. Minimum requirements: Bachelor of Science or Bachelors of Arts Degree in Computer Science or Computer Engineering; plus 3 years of experience in the job offered or in the related fields of Consultant Programmer or Systems Analysts. The 3 years of related experience should be in MVS based data systems in software using DB2, CICS and COBOL, with at least 1 year of experience in PL/1, REXX, and MICROFOCUS COBOL. Salary $50,000 annually and 40 hrs./wk. from 8:00 a.m. to 5:00 p.m. Applicants must have proof of present legal authority to work in the United States on a full time basis. Applicants must send two copies of their resumes to T. Bartel or M. Brooks; JETS, P.O. Box 7972, Madison, WI 53702-7972. Reference Case No 960070.

Technical Consultant (Sr. Switch Systems Engineer), 40hrs/wk, 3pm - 11 pm, $60,000/yr. Telecommunication software development. Perform analysis, planning, design & systems integration & testing for intelligent Network. Perform near real-time analysis of FTAM protocol on DMS-250 switches. Document, investigate & solve technical system problems associated with DMS-250 & AXE-10 switches. Min reqs: BS in Electrical Engineering, Computer Science Engineering, or Computer Science. 3 yrs in carrying out those duties set forth in the job offered or 3 yrs in telecommunication software development (to include therein 2 years in designing & testing on DMS-250 switches & 1 yr in designing & testing on AXE-10 switches). Apply at the Texas Employment Commission, Dallas, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O. #TX7504587. Ad Paid by an Equal Opportunity Employer.

Programmer Analyst to design and write applications in Microsoft Access and MS Visual Basic for accounting and scheduling software. Novell and Windows for Workgroups Network Administration and troubleshooting. Inhouse technical support and provide training to other programmers. B.S. in Industrial Engineering or Computer Science plus 1 year experience* in programming and network administration. (*One academic year in graduate coursework in Computer Science is equivalent to one year related work experience.) $32,000/yr. 40 hrs/wk. Send resume to: Nebraska Job Service, 550 South 16th Street, P.O. Box 94600, Lincoln, NE 68509. Refer to Job Order No: NE 0158973.

Software Engineer III, 40hrs/wk, 8-5, $47,000/yr. Lead a small group in the development, enhancement & maintenance of CSW system. Use of C, Design 1, & Smalltalk. Coordinate implementation & distribution of codes to mainframe & clients at & regional offices. Lead production support team responsible for oncall support to users & assist internal technical service groups. Primary contact for communication protocol between mainframe & endusers via regional gateways running as FCP, LU 6.2, & TCP/IP. Use of natural, COBOL, JCL, & IE STRADIS & FUSION. Min reqs: BS in Computer Science. 2 yrs in the Job offered or 2 yrs in telecommunications, mainframe coding in Natural, COBOL, & JCL, use of development methodology IE STRADIS or FUSION (to include therein 1 yr in client-server environments, in analysis, design & implementation of mainframe codes & 1/2 yr in C or Smalltalk, GUI development, & TCP/IP, FCP, & LU 6.2 protocols). Apply at the Texas Employment Commission, Dallas, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O. #TX7504840. Ad Paid by an Equal Opportunity Employer.

Sr. Programmer Analyst (& Openings) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to client needs; analyze, design & develop computer software for clients EDP systems; project planning, analysis, design, development & testing of new subsystems as well as maintenance of subsystems already in production using IBM 3090 running MVS/ESA, CICS, DB2, COBOL II, TSO, JCL & PC networks running Windows, VS & Microsoft SQL Server; Reqs. Bach. in Comp. Sci., Computer, Electrical or Electronics Engg., Systems Analysis, Comp. Info. Systems, Math or equiv. in ed. & exp., 2 yrs. exp in job offered or 2 yrs related exp such as Systems Analyst, Programmer, Software Engineer, Sr Analyst, Project Leader or Assoc. Consultant. Will accept 3 yrs. college ed. plus 3 yrs exp in job offered or related occup. in lieu of req'd ed. & exp. Related exp must include software development, maintenance & implementation of applications using IBM 3090, CICS, DB2, COBOL II, MVS/ESA, TSO, JCL & SQL Server; $56,000/yr., 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #30496 "Employer Paid Ad"

Software Engineer, 40hrs/wk, 8-5, $42,000/yr. Develop data transfer transactions in C++/C using OO techniques & ORACLE Access Modules to Pro*C, PL/SQL, & SQL*Plus to maintain customer information at client locations. Optimize & restructure OO class hierarchy using PURIFY & QUANTIFY testing tools. Build shell scripts to create tools for data related issues. Min reqs: BS in Electrical Engineering or Computer Science, 6 mos in carrying out those duties set forth in the job offered or 6 mos in RDBMS development (using SQL*Plus, Pro*C, & PL/SQL) on ORACLE & in shell programming. Past design & implementation of an object oriented software simulator using C/C++ under UNIX. Apply at the Texas Employment Commission, Dallas, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O. #TX7504586. Ad Paid by an Equal Opportunity Employer.

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SOFTWARE SYSTEMS ENGINEER. DUTIES: Researches, designs, and develops computer software systems in conjunction with hardware product development. Analyzes software requirements to determine feasibility and design within time and cost constraints. Consults with hardware engineers to evaluate interface between hardware and software. Formulates and designs software systems. Must have a Bachelors Degree in Computer Science, Mechanical Engineering, or Electrical Engineering. Must have 6 months' experience as a Software Engineer or Systems Engineer. Must have 6 months' experience maintaining engineering software in UNIX, VAX/C, RDB, and ORACLE environments (experience may be concurrent). 8:00 a.m.-5:00 p.m. M-F, 40 hours/wk. $47,000/yr. Send resumes to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref No. 31596 Employer Paid Ad.

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Serve as the team leader for a group of Analysts/Programmers responsible for production and processing jobs in support of a Marketing Database in an Oracle/UNIX environment. Monitor and interpret processing statistics to optimize processing efficiency and project resource requirements. Coordinate with DBAs and system administrators in collecting system utilization statistics. Define opportunities for re-engineering processes and assist in the analysis, programming, and testing of process changes, enhancements and development efforts.

A minimum of five years' experience including a proven track record in progressively challenging MIS positions and a BS or MS in Information Systems are required. Will have knowledge of Oracle, SAS, SQL, UNIX scripting, and the ability to program in C++. Experience in technical production support, implementing systems from development to production, or a high-volume transaction environment is a plus. CODE: ACW0001

APPLICATION PROJECT MANAGER

Manage application development and support Telebank System. Provide leadership in an object-oriented environment while managing project schedules, consultants and personnel in a 24x7 remote customer delivery channel.

Ten to 15 years' experience in a progressive systems development, object-oriented environment and a BSCS are required. Must be customer-driven with strong communication and problem-solving skills. Relationship to Network solutions experience highly desirable. Object-oriented programming experience a plus. CODE: ACW0002

DATABASE ADMINISTRATORS

Develop detailed recommendations for data storage and database implementation. Maintain the integrity of specific-purpose and multi-purpose data repositories. Analyze impact of changing business requirements and growth to existing and planned databases.

Qualified candidate will have strong data modeling background, SQL knowledge, and proven DBA experience creating and maintaining Oracle databases in a UNIX environment. Understanding of Client/Server computing is essential. CODE: ACW0003

MIS ANALYSTS

Define end-user business requirements in a Business Operations and Business Support environment. Develop project implementation plans and coordinate development activities. Work with a variety of querying and analytical software to extract, manipulate and report information. Assist end-users in ad hoc querying and reporting.

Requires a BS or MS in Information Systems. Experience with SQL, RDBMS, and Client/Server development is required. PowerBuilder or SAS experience a plus. CODE: ACW0004

DATA ANALYSTS

Provide marketing and analysis functions on a major corporate data warehouse team. Work with a variety of querying and analytical software to extract, manipulate and report information. Support technical and non-technical users.

Must possess experience with SQL, RDBMS, DSS in a UNIX/NT environment and a BSCS or equivalent. Strong communication skills as well as the ability to manage multiple projects and provide business solutions in a fast-paced, leading edge technology environment are required. CODE: ACW0005

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I/T QUALITY ASSURANCE MANAGER

The successful candidate will possess at least five years in a leadership role encompassing quality assurance and data security components. Extensive understanding of mainframe security issues required, experience with other platforms a plus. Will be responsible for implementing and monitoring compliance of all IT quality efforts.

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Computer Systems Consultant. Bach's in Computer Science, Systems Eng., Elec. Eng. or Comp. Eng. & 2 yrs.' work exp. in providing info. systems tech. consulting services to corps. The 2 yrs.' work exp. must incl. 1 yr. in design of electronic mail systems, in administering local area networks & in implementing & troubleshooting TCP/IP networks, incl. use of network analyzer tools, 6 mths. of work or school thesis project exp. in programming or comp. software design utilizing a high-level programming lang. Exp. may be gained concurrently. Must also have Novell CNE or Microsoft Systems Engineer Cert. Requires 30% travel or Latin Amer. Must be fluent in reading, writing & speaking Spanish. Assist corporate & institutional clients & provide strategic planning services, incl. architecting, designing, implementing & troubleshooting local & wide area computer networks & elect. mail systems that link personal computers with TCP/IP & other networking protocols. Utilize MS-DOS, Windows, Windows NT, & Unix operating systems, & Visual Basic lang. Travel to Latin Amer. countries up to 50% of time. 40 hrs./wk. 8:30-5:00. Sal. range: $60,000-$67,000/yr. dep. on educ. & exp. MUST HAVE PROOF OF LEGAL AUTHORITY TO WORK IN THE U.S. Job location: Ft. Lauderdale Area. Employer Submit resume to: Job Service of Florida, 2980 W Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347. Re. Job Order No. FL-1383417.

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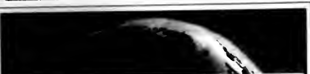

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Systems Engineer, 40hrs/wk., 8am - 5pm, $38,000/yr. Design of client/server systems based on Windows NT 3.51 network operating system & SQL server 4.21a. Maintenance of local area network (Ethernet, Token Ring) & administration of system accounts. Database support for electronic medical records software. Software installation & troubleshooting. M.S. in Computer Science or Electrical Engineering as well as three months experience in job offered or as Systems Support Engineer required. Previous experience must include: client-server applications (front-end Windows); Ethernet; system & database administration & support. Graduate education must include: one course on Multiprocessor Operating systems; one project on Ethernet & Token Ring simulation & performance analysis. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: James Gregory, Reference #V-IL-13853-Z. NO CALLS. An Employer Paid Ad.

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Host product level 3 support positions:
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Host product development positions, desired skills:
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- Knowledge of IPDS or PCL a plus

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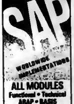

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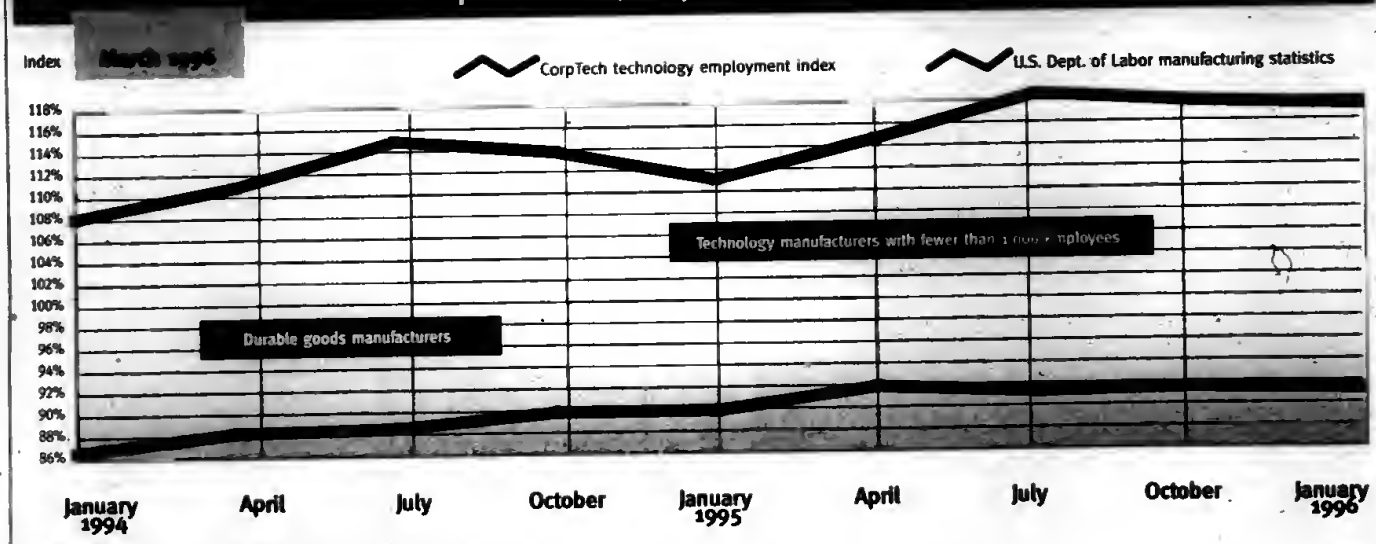

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Marketplace

Memories for tomorrow

Memory extender software catches up with Windows

By Daniel Lyons

Memory extender software was designed to overcome the limitations of Windows 3.1 and let users run more concurrent applications. Yet most of these Windows 3.1 utilities began to reach the market just last year.

Mike Spilo, president of Helix Software Co. in Long Island City, N.Y., says it took several years to deliver the utilities because even though they are inexpensive, they are not simple to develop. "Our product, Hurricane, took three years to develop. It's very complex technology," Spilo says.

Helix is developing a Windows 95 version of its product. But Spilo and others say the market for Windows 3.1 utilities will be viable for a long time. "There are still a lot of corporations that are staying with Windows 3.1," says Gina Clark, manager of the utilities group at Connectix Corp. in San Mateo, Calif.

TECHNOLOGY ROUNDUP

Memory extenders

Connectix developed RAM Doubler, which is ranked second in the market. The leader is MagnaRAM from Quarterdeck Corp. in Santa Monica, Calif., according to George Meier, publisher of "Software Analyst," a newsletter in Millburn, N.J. The newsletter tracks software sales through reseller channels.

It's hard to do an apples-to-apples comparison of memory extender products because each one takes a different approach. All of them address one or more of the following areas:

- **LOWER MEMORY.** Some programs free up lower memory space by moving device drivers from conventional memory to extended memory and improving the way Windows manages lower memory.
- **RAM SPACE.** Some programs compress data, making it seem as if there's more RAM available.
- **RESOURCE SPACE.** Some programs enlarge system resources — the memory space that Windows uses to keep track of dialog boxes, icons and so on. This helps prevent "out of memory" errors, which can occur no matter how much RAM a system has.

Windows 95 addresses some of the shortcomings that Windows 3.1 had with resource management. But it also creates more appetite for RAM space, and the leading vendors are preparing Windows 95 versions of their products.

"It's a big category, and since Windows 95 came out, it's become even bigger," says Ann Stephens, president of PC Data, Inc., a market research firm in Reston, Va.

Some feared the memory extender market would be hurt by a scandal that occurred late last year: Independent testing labs declared that SoftRAM 95, a popular Windows 95 memory extender, didn't perform as advertised.

Syncronys Softcorp in Culver City, Calif., which developed SoftRAM, has taken the product off the market and is working on a new version.

Syncronys, which claimed that SoftRAM increased available RAM space in Windows 3.1 and Windows 95, sold 700,000 copies of the product before the lab reports were released. Syncronys faces class-action lawsuits from users, according to a company spokesman. ■

Lyons is a freelance writer in Ann Arbor, Mich.

Don Knotts

Leading memory extender products

Hurricane
Price: $50
Description: Available since June, Hurricane increases the amount of available system resources and RAM space, says Mike Spilo, president of Helix Software. He says Hurricane can improve performance by 30%. Other products offer greater RAM space or greater resources but slow down the system, he said. A version of Hurricane for Windows 95 is due by the end of the month.
Helix Software Co., Long Island City, N.Y.
(800) 451-0551, http//www.helixsoftware.com

MagnaRAM
Price: $49
Description: MagnaRAM is a compression product that deals with RAM space, not resources. It works with Windows 3.1 and Windows 95. Some tests have shown a degradation of performance in systems that use MagnaRAM. Officials say that's because MagnaRAM uses idle cycles to compress data, but tests usually involve scripts that don't contain idle time. Depending on the application, users see a RAM increase of 1.5 to 1.8 times, says Ian Gold, senior product manager at Quarterdeck.
Quarterdeck Corp., Santa Monica, Calif.
(310) 309 3700, http//www.quarterdeck.com

RAM Doubler for Windows 3.1
Price: $80
Description: RAM Doubler increases available system resources and also increases available RAM space, says Gina Clark, manager of the utilities group at Connectix. A key differentiator is ease of installation. "The product installs in 10 seconds, and the user never does anything again," Clark says. She concedes that this might be seen as a drawback by users who like to fidget with buttons and gadgets. Connectix is developing a Windows 95 product that it will sell separately from the Windows 3.1 product.
Connectix Corp., San Mateo, Calif.
(415) 571-5100, http//www.connectix.com

MemPlus 2.0
Price: $39.95
Description: MemPlus deals with "low DOS memory" — or the first 1M byte of memory — by moving some Windows code and device drivers out of the low DOS memory and into extended memory. This frees up space in low DOS memory so more applications can be loaded. AnswerSoft's main line of business involves providing computer/telephone integration solutions for call centers. It developed MemPlus originally to solve problems that its customers faced when they tried to run several applications at once.
AnswerSoft, Inc., Plano, Texas
(214) 612-5100, http//www.he.net/~answer

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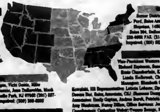

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WHATEVER IT TAKES

Wall Street analysts like Oracle, 122

Finance & Investing

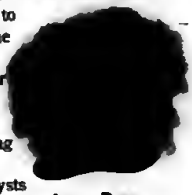
Coming next week: When an investment becomes a conflict of interest

Testing the client/server waters

Though dominated by giants SAP AG and Oracle Corp. (NASDAQ:ORCL), the client/server market is home to scores of smaller companies fighting for key market positions, analysts say. "This market has tolerated a lot of niche players, and I don't see that changing," says Robert Kugal, an analyst at The Seidler Cos. in Los Angeles. Rosemary Cafasso, a freelance writer in Walpole, Mass., takes a look at three public companies that represent the range of investment opportunities in this arena.

PeopleSoft, Inc.

When PeopleSoft (NASDAQ:PSFT) went public in November 1992, it looked like just another software applications company. But it got into the client/server game early, and now that's paying off. PeopleSoft has more than 700 customers, and it doubled its 1994 revenue to $227.5 million in 1995. The company, which is strongest in client/server human resources software, has expanded to financial and manufacturing software.



Low Risk

Many Wall Street analysts consider PeopleSoft a solid long-term investment choice.

"If you are looking for a quick pop, then PeopleSoft is not the appropriate investment," says Douglas Crook, an analyst at Montgomery Securities in San Francisco who gives the company a Buy rating. "If someone is looking for a long and steady investment that will continue to provide above-average returns, and if they have the time to wait, then PeopleSoft is an excellent investment alternative."

Not that life is perfect for PeopleSoft. It continues to face serious competition from SAP and Oracle, although many analysts say the company is in good shape to challenge them.

Headquarters: Pleasanton, Calif.
1995 revenue: $227.5 million
1995 profit: $29.3 million
1995 earnings per share: 54 cents
1996 estimated earnings per share: 90 cents, according to Douglas Crook, Montgomery Securities

Hyperion Software Corp.

Hyperion (NASDAQ:HYSW) is one of those quiet companies that generates well beyond $100 million in revenue but doesn't seem to wow the industry.

Even so, many analysts are upbeat about Hyperion, although they stop short of giving it the ringing endorsements that PeopleSoft gets. Compared with PeopleSoft, "it's a riskier investment," Kugal says. "It's for the more discerning, adventurous [investor]."

Low to Moderate Risk

The company has succeeded in the financial consolidation software market and is moving into client/server financial applications and data analysis. Hyperion is sticking to the financial arena, opting for a best-of-breed approach. This strategy could limit its appeal because its competitors, including SAP, Oracle and PeopleSoft, offer integrated suites of financial, manufacturing and human resources applications.

Chris Mortenson, a managing director at Alex. Brown & Sons, Inc. in Baltimore, says Hyperion should be able to execute its strategy with reasonable success.

Headquarters: Stamford, Conn.
1995 revenue*: $137.1 million
1995 profit: $12.1 million
1995 earnings per share: 70 cents**
1996 estimated earnings per share: 87 cents when R&D write-off is included, according to Chris Mortenson, Alex. Brown & Sons

Platinum Software Corp.

For nearly two years, Platinum Software (NASDAQ:PSQL) has struggled with financial problems, management upheavals and a changing product strategy.

After a string of embarrassing setbacks in 1994 stemming from improperly reporting revenue, the company scaled back to focus strictly on financial software. But it still isn't on track.

High Risk

In early February, the company reported yet another disappointing quarter. Wall Street analysts responded by lowering their earnings estimates, which were not flattering in the first place.

Even so, Kenneth Burke, an analyst at Hambrecht & Quist, Inc. in San Francisco, and other analysts say all is not lost. Platinum has a solid Microsoft Corp. Windows NT-based product and an established network of value-added resellers.

Still, Platinum's stock "is for the guys who like to hitchhike to Atlantic City," Kugel says. "The potential payoff is huge, but the risks are commensurate."

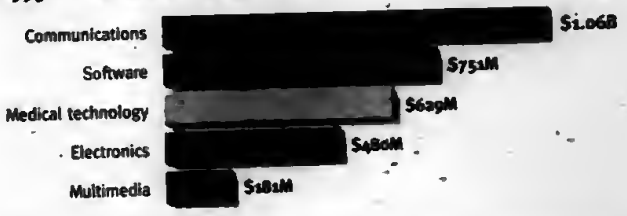
Headquarters: Irvine, Calif.
1995 revenue*: $56.2 million
1995 loss: $5.7 million
1995 loss per share: 44 cents
1996 estimated loss per share: 89 cents, according to Kenneth Burke, Hambrecht & Quist

*Platinum has a June-to-June fiscal year.

$$ flow to communications

The communications segment of industry received the largest amount of venture capital funding in 1995, according to a survey of venture capital firms by Coopers & Lybrand. The software sector came in second. In all, venture capital firms pumped more than $6.6 billion of private equity into U.S. companies.

1995 U.S. technology investments



Source: Coopers & Lybrand, New York

Stock Ticker March 8, 1996

Gainers / Losers

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Industry Almanac

Strong and steady Oracle

Oracle Corp. (NASDAQ:ORCL) leads the pack of database software companies and heads the buy lists of many analysts for this sector.

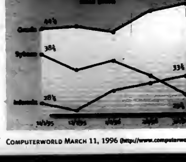
"Today's Oracle is like IBM was in the 1960s," says Ed Bierdeman, director of research at Dakin Securities Corp. in San Francisco. "You've got to own it. The company has become an important player in all major areas of technology and is executing beautifully."

Steve Certo, an analyst at Wheat First Butcher Singer in Richmond, Va., places Oracle in his "outperform" category. "That's not a strong, screaming 'buy,' but the company should show solid appreciation over the next 12 months," he says.

"Oracle is a market leader in relational databases and data warehousing, but the company's fastest and largest growth in the past year came from its business applications for manufacturing, human resources and financial markets," Certo says.

The underlying fundamentals of the database software industry are strong, but some analysts say **Sybase, Inc. (NASDAQ:SYBS)** and **Informix Corp. (NASDAQ:IFMX)** are overvalued.

"Sybase made a mistake early on not to focus on application vendors" for partnerships and database tie-ins, says Marshall Senk, an analyst at Montgomery Securities in San Francisco. "Now they're having to try and catch up to Oracle and Informix." *— Stewart Deck and Tam Harbert*



Exch	52-Week Range			Mar. 8 1 pm	Wk Net Change	Wk Pct Change
COMS	53.63	25.75	3COM Corp.	45.06	-0.56	-1.2
AIT	66.88	40.75	Ameritech Corp.	55.38	-2.50	-4.3
AXE	22.11	14.63	Amirter Int'l	17.38	-1.25	-6.7
APTS	15.00	2.75	Apertus Tech.	3.75	-0.50	11.8
T	68.88	47.88	AT&T	42.25	-0.13	-0.2
ASND	47.75	7.75	Ascend Communications	45.94	3.69	8.7
BNYN	18.61	6.00	Banyan Systems Inc	8.00	0.00	0.0
BAY	50.00	21.61	Bay Networks Inc.	32.63	1.38	-9.4
BEL	80.38	50.75	Bell Atlantic Corp	41.88	1.75	-2.7
BLS	45.88	28.25	Bellsouth Corp	38.00	-1.38	-3.5
BBN	48.75	14.50	BBN Corp			
	36.63	4.11	12.2			
BBXT	30.75	9.13	Brooktrout Technology (H)	30.13	6.13	25.5
CS	87.75	40.75	Cabletron Systems	69.75	-1.50	2.1
CSCC	78.50	20.38	Cascade Communications	78.50	11.50	37.2
CGRM	25.11	12.75	Centigram Communications	19.13	-1.88	-8.9
CSCO	51.00	16.75	Cisco Systems Inc.	43.03	-1.50	-3.3
CLIX	11.38	6.00	Compression Labs Inc.	6.75	-0.38	-5.3
CMNT	12.75	4.00	Computer Network Tech.	5.50	9.50	10.0
XCOM	14.50	8.75	CrossComm	9.50	-0.63	-6.2
DIGI	44.00	31.88	DSC Communications	29.50	0.13	0.4
FORE	38.75	38.50	FORE Systems Inc.	63.75	1.00	1.6
GDC	21.88	9.25	General Datacomm Inds	10.25	-1.50	-12.8
GSX	42.50	28.00	General Signal Networks	38.38	-0.25	-0.7
GTE	49.75	31.88	GTE Corp	42.25	-0.13	-0.3
MCIC	31.00	19.09	MCI Communications Corp	30.25	0.15	0.4
MICM	12.50	5.50	MICOM Communications Corp	9.75	0.88	10.4
MNPI	33.13	9.13	Microcom Inc (H)	32.25	4.63	16.4
NETM	34.00	50.00	NetManage Inc.	11.50	-0.38	-3.2
NTRX	8.75	1.63	Netrix Corp	4.25	0.25	6.3
NCDI	12.00	4.38	Network Computing Devices	5.75	-1.11	-16.4
NWK	42.00	19.75	Network Equipment Tech.	36.50	-2.30	-8.6
NETG	48.50	22.75	Network General	38.75	-0.25	-0.6
NN	53.75	25.00	Newbridge Networks Corp	40.00	-1.13	-2.2
NT	50.88	31.50	Northern Telecom Ltd	48.25	3.00	2.3
NOVL	23.25	11.38	Novell Inc (L)	12.29	0.38	3.2
NYN	59.75	38.00	Nynex Corp	51.65	0.61	1.2
OCTL	42.63	18.00	Octel Communications Corp	39.75	0.88	2.3
ODSI	43.25	13.25	Optical Data Systems Inc.	31.25	-4.00	-35.9
PCTL	44.72	13.38	PictureTel Corp	35.75	1.13	3.2
PTON	30.75	5.11	Proteon Inc. (L)	5.13	-0.50	-8.9
RACO	7.88	4.25	Racotek Inc.	5.00	0.06	1.3
RETX	5.50	1.83	Retix	3.75	-0.38	-9.3
SFA	36.88	11.38	Scientific Atlanta Inc.	16.25	-0.25	-1.5
SHVA	88.50	27.00	Shiva Corp	87.50	6.75	8.4
SBC	60.25	38.63	Southwestern Bell Corp	53.38	-0.50	-0.6
FON	45.50	37.75	Sprint Corp	36.38	-0.13	-14.4
SMSC	21.50	12.50	Standard Microsystems Corp.	16.50	1.25	8.2
STRM	44.50	16.00	Stratacom Inc.	36.50	0.38	1.0
TBIT	8.45	2.38	Telebit Corp	4.44	-0.19	-4.1
USRX	136.75	28.50	US Robotics (H)	115.50	-1.75	-1.5
USW	48.38	28.38	US West Inc.	31.88	-1.25	-3.8
XIRC	17.00	8.88	Xircom	30.63	-0.13	1.2

Exch	52-Week Range			Mar. 8 1 pm	Wk Net Change	Wk Pct Change
AALR	9.63	4.13	Advanced Logic Research	7.75	0.25	3.5
AAPL	50.13	26.00	Apple Computer Inc. (L)	20.00	-0.69	-2.6
ASTA	19.13	5.75	AST Research Inc. (L)	5.81	-0.69	-10.6
CPQ	56.75	31.13	Compaq Computer Corp	38.88	-3.13	-7.4
DELL	49.38	30.38	Dell Computer Corp	38.00	2.50	-8.4
GATE	17.50	18.00	Gateway 2000 Inc.	24.38	-1.38	-5.3
HWP	104.11	57.88	Hewlett Packard Co.	91.75	-2.88	-3.0
MUEI	38.88	9.25	Micron International Inc.	9.38	-1.00	-9.6
NIPNY	75.11	49.38	NEC America	55.00	-3.88	-6.6
SGI	45.63	31.17	Silicon Graphics	34.25	0.75	3.1
SUNW	52.13	15.63	Sun Microsystems Inc.	44.25	-4.25	-8.7

Exch	52-Week Range			Mar. 8 1 pm	Wk Net Change	Wk Pct Change
AMH	11.63	6.75	Amdahl Corp	8.88	0.11	1.4
CYR	38.75	17.13	Cray Research Inc.	28.38	0.13	0.4
DGN	19.13	6.75	Data General Corp	14.88	-1.00	-6.5
DEC	26.50	31.50	Digital Equipment Corp	67.11	-4.00	-6.0
IBM	128.88	76.50	IBM	115.00	-3.75	-3.2
MDCD	13.00	3.00	Meridian Data Inc	30.00	-1.50	-13.0
NETF	7.75	6.75	NetFrame	4.63	-0.38	-7.5
SQNT	38.38	30.75	Sequent Computer Sys (L)	11.00	-0.50	-4.3
SEQS	10.00	1.61	Sequoia Systems Inc.	3.88	0.00	0.0
SRA	36.11	23.00	Stratus Computer Inc.	27.50	-1.38	-4.8
TDM	17.75	8.88	Tandem Computers Inc.	8.88	-0.75	-7.8
TRCD	5.75	2.00	TriCord Systems	3.75	-0.19	-4.8
UIS	13.63	5.50	Unisys Corp	5.88	-0.13	-2.1

Exch	52-Week Range			Mar. 8 1 pm	Wk Net Change	Wk Pct Change
ADBE	74.75	30.00	Adobe Systems Inc.	32.00	1.11	3.6
AMSWA	6.75	3.50	American Software Inc.	1.88	-0.13	-9.1
APLX	41.75	8.25	Applix Inc.	38.00	3.88	-10.0
ARSW	48.50	28.75	Arbor Software	44.50	1.65	3.8
ACAD	51.00	27.75	Autodesk Inc.	54.25	-1.00	-3.0
BACH	11.88	3.75	Bachman Info. Systems	10.25	-0.30	-4.7
BGSS	42.00	26.00	BGS Systems Inc.	34.50	-0.75	-2.1
BMCS	58.00	27.63	BMC Software Inc	54.75	2.63	5.0
BOOL	26.38	18.25	Boole and Babbage	22.63	-0.63	-2.7
BORL	21.25	7.13	Borland Int'l Inc.	18.75	-0.25	-1.3
BOBJY	78.50	28.75	Business Objects	68.50	-4.75	-6.5
CESH	3.94	1.38	CE Software	3.00	0.19	6.7
CYE	27.88	12.38	Cheyenne Software Inc.	27.15	-1.00	-4.3
COGNF	52.50	38.75	Cognos Inc.	51.88	1.69	3.4
CA	76.50	37.00	Computer Associates	67.00	-0.25	-0.4
CVN	15.50	4.63	Computervision Corp	10.50	0.13	1.2
CPWR	38.00	15.50	Compuware Corp	23.50	0.75	3.3
CSRE	27.25	9.88	Comshare Inc.	22.00	0.00	0.0
COSFF	19.50	8.38	Corel Corp	10.44	0.31	3.1
DWTI	16.25	6.25	Dataware Technologies Inc.	6.50	-0.75	-30.3
DSLGF	52.75	9.25	Discreet Logic Inc.	13.00	-1.88	12.6
FILE	67.00	30.25	FileNet Corp	50.00	-4.25	-8.7
DDDDF	8.25	1.38	4th Dimension	6.00	-0.65	-9.4
FTPS	80.61	50.38	FTP Software Inc	13.25	-0.38	-2.8
GSOF	38.00	7.50	Group 1 Software	9.75	2.25	20.0
GPTA	12.25	4.88	Gupta	5.25	-0.75	-32.5
HOGN	13.88	5.50	Hogan Systems Inc.	17.38	0.00	0.0
HYSW	28.38	14.00	Hyperion Software Corp	19.50	-0.50	-2.5
IRIC	18.63	10.00	Information Resources	14.50	0.38	1.8
IFMX	36.75	16.63	Informix Corp	55.50	-0.63	-1.8
INGR	30.11	10.00	Intergraph Corp	17.00	-1.31	-7.2
LEAF	12.61	6.25	Interleaf Inc	8.63	1.00	-10.4
ISLI	38.75	8.75	Intersolv Inc.	12.88	0.38	3.0
INTU	89.25	38.63	Intuit Inc.	43.00	-7.33	-14.2
LGWX	19.50	50.88	Logic Works	19.00	0.13	0.7
MGICF	13.75	3.61	Magic Software Enterprises (H)	30.88	2.50	-10.7
MANU	70.50	9.50	Manugistics Group Inc.	14.13	-0.88	-5.8
MAPS	40.00	10.00	MapInfo Corp	12.75	0.75	6.3
MATH	7.38	2.75	MathSoft	6.13	-0.63	-9.3
MCAF	80.50	11.75	McAfee Associates (H)	57.25	4.75	9.0
MENT	32.88	38.88	Mentor Graphics	13.75	-0.63	-4.5
MIFGY	12.88	8.25	Micro Focus	9.25	0.00	0.0
MGXI	15.11	5.75	Micrografx Inc.	12.88	-0.88	-6.0
MSFT	109.75	62.88	Microsoft Corp.	96.50	3.50	3.6

Exch	52-Week Range			Mar. 1 1 pm	Wk Net Change	Wk Pct Change
ORCL	55.00	28.00	Oracle Corp	48.50	-0.88	-1.8
PMTC	38.25	17.88	Parametric Technology	34.50	-0.38	-1.1
PARQ	17.50	6.63	ParcPlace Systems Inc.	7.88	-0.88	-10.0
PSFT	57.25	18.25	PeopleSoft	48.50	-4.75	-8.9
PTEC	36.13	6.13	Phoenix Technologies	12.88	-0.38	2.6
PSQL	16.88	3.13	Platinum Software	5.75	-0.13	-2.1
PLAT	26.00	31.25	Platinum Technology	14.50	1.13	8.4
PRGS	38.00	19.50	Progress Software Corp	21.50	-0.40	3.1
RNBO	26.75	35.13	Rainbow Technologies Inc	19.75	-2.13	-9.7
ROSS	7.75	2.39	Ross Systems	2.44	-0.06	-2.5
SCOC	39.00	5.50	SCO Inc.	6.50	-0.63	-8.8
SDTI	67.50	12.00	Security Dynamics Tech.	59.50	1.50	2.6
SKEY	51.75	13.38	Softkey International Inc.	21.25	-0.38	-1.7
SPCO	5.13	2.19	Software Publishing Corp	2.94	-0.06	-2.1
SQAX	27.25	16.00	SQA Inc.	25.69	-1.56	-5.7
SOTA	14.88	6.63	State of the Art	12.81	0.13	5.8
SSW	70.88	32.88	Sterling Software Inc. (H)	67.88	2.50	3.8
SDRC	32.50	7.00	Struct. Dynamics Research	31.38	1.88	6.4
SYBS	45.75	19.88	Sybase Inc.	38.50	-1.31	-4.4
SYMC	33.25	9.88	Symantec Corp.	12.15	-0.63	-4.9
SNPS	38.50	23.00	SynOpsys	32.25	-1.08	3.2
SSAX	30.63	12.63	System Software Assoc.	30.63	-0.13	-0.6
SYSF	18.13	7.75	Systemsoft Corp	13.25	-0.75	5.6
TRUV	10.13	3.88	Truevision Corp	6.50	0.50	8.3
VIEW	15.13	8.38	ViewLogic Systems	10.38	-0.25	-2.4
VMRK	21.50	5.75	VMark Software Inc.	7.63	-0.50	-6.2
WALK	31.13	4.63	Walker Interactive Systems	9.25	-0.25	-3.8
WALL	35.50	13.00	Wall Data Inc.	50.00	-1.13	-7.4
WANG	24.63	11.13	Wang Laboratories Inc.	22.88	0.63	2.8

Exch	52-Week Range			Mar. 1 1 pm	Wk Net Change	Wk Pct Change
AMER	57.00	16.75	America On-Line	44.88	1.88	-4.0
NETC	91.50	19.00	Netcom On-Line	23.50	-0.50	-2.1
NSCP	87.00	22.00	Netscape Comm. Corp	38.50	-18.00	-26.7
PSIX	29.00	8.75	PSINet	9.19	-0.50	-5.8
QDEK	38.50	3.38	Quarterdeck Corp.	10.63	-1.81	-9.8
SPYG	61.00	13.75	Spyglass Inc.	30.00	-3.00	-13.0
UUNT	98.75	25.75	UUNET Tech.	26.25	-3.50	-11.8

Exch	52-Week Range			Mar. 1 1 pm	Wk Net Change	Wk Pct Change
AMD	39.25	16.13	Advanced Micro Devices	17.63	-1.38	-7.2
ADI	30.13	16.63	Analog Devices Inc	25.63	0.25	1.0
CHPS	15.88	6.61	Chips and Technologies	8.25	-0.50	-5.7
CRUS	61.15	16.75	Cirrus Logic	18.38	-0.75	-3.9
CY	27.75	10.00	Cypress Semiconductor Corp	11.63	-0.75	-6.3
CYRX	48.75	18.25	Cyrix	21.00	-1.38	-6.3
INTC	78.38	39.63	Intel Corp.	53.13	-3.15	-5.6
LSI	62.50	22.50	LSI Logic Corp.	25.50	0.13	0.5
LSCC	43.00	23.00	Lattice Semiconductor	27.44	-3.06	-10.0
MCRL	32.30	32.50	Micrel Semiconductor Inc	14.00	-0.50	-3.4
MU	94.75	28.75	Micron Technology (L)	30.00	-2.38	-7.6
MOT	82.50	48.75	Motorola Inc.	52.38	-0.25	-0.9
NSM	33.63	14.13	National Semiconductor (L)	14.63	-0.38	-2.5
SERA	28.75	9.75	Sierra Semiconductor	30.88	-1.75	-7.7
TXN	83.75	42.50	Texas Instruments	49.13	0.00	0.0
VLSI	39.13	11.88	VLSI Technology (L)	11.25	-0.31	-2.6
WWTK	6.88	1.25	Weitek (L)	1.75	-0.94	-34.9
WDC	22.11	33.13	Western Digital Corp	18.00	-2.00	-30.0
XLNX	55.50	20.75	Xilinx	32.50	0.75	2.0
ZLG	54.13	28.50	Zilog Inc.	32.00	-0.50	-1.5

Exch	52-Week Range			Mar. 1 1 pm	Wk Net Change	Wk Pct Change
APCC	25.88	7.88	American Power Conversion	30.63	0.00	0.0
ADPT	56.38	29.25	Adaptec Inc.	66.75	-3.50	-7.0
CBEX	33.15	3.30	Cambex Corp	5.75	-0.50	-8.6
CGN	7.25	2.25	Cognitronics Corp	4.88	-0.31	-6.0
CREAF	16.13	5.88	Creative Technologies Inc.	6.69	-0.94	-12.3
RACE	13.15	3.65	Data Race Inc	4.88	0.13	2.6
DTM	9.38	6.13	Dataram Corp.	6.25	0.29	5.6
EMC	27.38	33.00	EMC Corp	20.25	-1.50	-6.6
EMLX	28.50	6.38	Emulex Corp	10.25	-0.13	-1.2
ESCC	25.38	13.00	Evans and Sutherland	22.25	1.00	-4.3
EXBT	18.75	10.00	Exabyte	13.88	-0.88	-5.9
IISLF	4.25	2.50	Intelligent Info. Systems	2.25	-0.19	-7.7
IOMG	20.00	2.25	Iomega Corp	16.63	-0.88	-5.0
IPLSA	7.88	2.50	IPL Systems Inc	4.38	0.00	0.0
KMAG	32.50	12.50	Komag Inc	28.63	-0.50	-1.7
MLIS	2.50	3.25	Micropolis Corp (L)	2.25	-0.31	-32.2
MTSI	37.75	11.25	Micro Touch Systems Inc.	14.75	-0.88	-5.6
PEAK	36.75	18.75	Peak Technology Group	21.50	-2.25	-9.5
PNCL	19.75	5.88	Pinnacle Micro Inc.	8.25	-0.25	-8.3
PTNX	38.75	13.50	Printronix Inc	38.00	-1.75	-8.6
AQM	7.63	3.75	QMS Inc.	4.79	-0.38	-7.3
QNTM	28.50	13.75	Quantum Corp.	12.13	0.38	2.2
RDUS	14.13	0.94	Radius Inc. (L)	1.08	-0.38	-26.1
SEG	67.75	24.00	Seagate Technology	55.50	-5.63	-9.3
STK	31.75	37.88	Storage Technology	38.50	-3.13	-10.5
TEK	61.88	38.75	Tektronix Inc.	30.25	-14.75	-33.3
XRX	144.61	109.38	Xerox Corp	127.25	-2.88	-2.2

Exch	52-Week Range			Mar. 1 1 pm	Wk Net Change	Wk Pct Change
AMSY	26.38	11.38	American Mgmt. Systems (H)	24.38	-0.25	-1.0
ANLY	37.75	20.25	Analysts Int'l (H)	36.15	0.13	0.3
AUD	43.38	30.25	Auto Data Processing	38.00	-0.50	-1.3
CATP	61.00	27.25	Cambridge Tech. Partners	46.25	-4.50	-8.6
CEN	47.50	30.63	Ceridian Corp.	45.15	2.25	1.2
CDO	23.75	16.38	Comdisco Inc.	30.61	-0.50	-2.4
CHRZ	33.30	6.63	Computer Horizons	30.00	0.50	1.2
CSC	80.75	46.50	Computer Sciences	71.63	-0.50	-0.7
TSK	22.00	9.50	Computer Task Group	20.00	1.38	7.4
CPU	44.38	17.50	CompUSA Inc.	41.88	3.75	9.8
CDAT	24.25	6.50	Control Data Systems Inc. (H)	22.38	1.33	5.3
EGGS	14.25	5.00	Egghead Discount Software	6.38	0.50	8.5
GME	58.00	38.38	General Motors E (EDS) (H)	56.00	-0.25	-0.4
IIAC	18.50	7.88	Inacom Corp.	16.69	-1.19	-6.6
INEL	14.63	3.50	Intelligent Electronics	6.25	-0.38	-5.7
KCA	50.88	18.38	Keane Inc	50.75	0.30	1.8
MSEL	8.38	2.25	Merisel	2.50	-0.25	-8.9
MICA	15.00	7.25	Microage Inc.	9.63	-0.75	-2.5
PAYX	50.75	26.38	Paychex	50.75	2.50	4.6
PMS	54.25	42.63	Policy Management Sys.	30.00	-0.75	-1.5
REY	40.25	25.88	Reynolds and Reynolds (H)	40.15	2.13	5.6
SEIC	24.50	17.25	SEI Corp	22.25	0.25	1.1
SMED	61.75	32.00	Shared Medical Systems (H)	60.63	5.25	9.5
SSPE	26.50	14.88	Software Spectrum Inc.	19.00	-0.38	-3.5
SNDT	36.00	20.50	Sungard Data Systems (H)	34.00	-1.00	-2.9

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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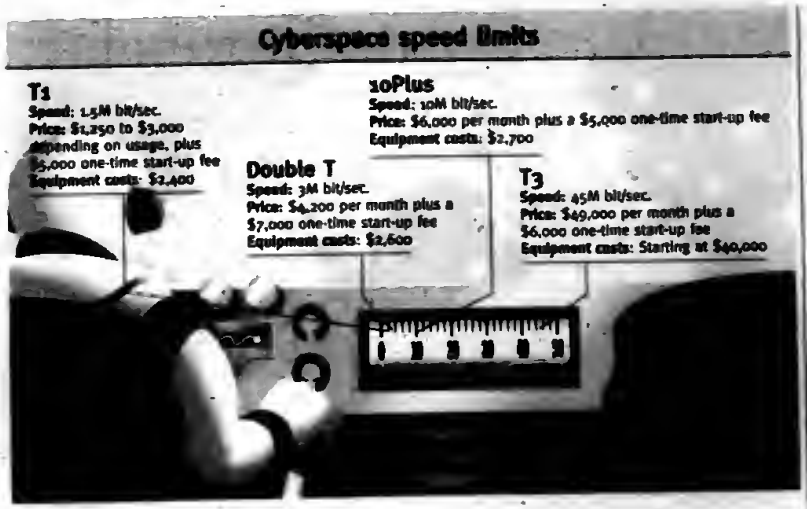


Internet access pipe widens

CONTINUED FROM PAGE 1

45M bit/sec. But the T3 lines cost $49,000 per month. Partial-access T3 lines are available for smaller monthly fees, but these "tiered" or "fractional" T3 lines require the same, expensive ($40,000 and up) equipment for start-up as the full T3 feeds do.

UUnet, in Fairfax, Va., today will offer Double T, which runs at 3M bit/sec. Double T will cost $4,200 per month, plus a $7,000 start-up fee. It will require about $2,600 in specialized networking equipment.

UUnet also will introduce today 10Plus, which runs at 10M bit/sec. and costs $6,000 per month. 10Plus will require a $5,000 start-up fee and about $2,700 worth of additional equipment. Both connection types require special routers from Cisco Systems, Inc.

MCI next Monday will announce connectivity at 3.4M, 4.5M and 10M bit/sec., said John Houser, a spokesman at the Washington firm. He said pricing hasn't been determined and declined to provide more information.

Until now, users had the choice of staying with T1 or making the big leap to very expensive T3 service.

For example, besides the $49,000 monthly fee, UUnet charges a $6,000 start-up fee for a T3 line and $40,000 or more for special networking equipment. That compares with $1,250 to $3,000 per month for the T1 line, a $5,000 start-up fee and a $2,400 charge for equipment.

The monthly T1 charge depends on how much capacity a customer actually uses.

The new services are arriving just as user complaints about slowdowns on the Internet are rising [CW, Feb. 26].

Analyst Amie Shapiro at International Data Corp. in Framingham, Mass., said she expects many Internet service providers will begin offering a rich menu of high-speed connection options this year.

"UUnet isn't going to be in the lead for long," she said.

Should IS managers police the Internet frontier? See page 81.

Protocol ties in remote sites via Internet

By Laura DiDio

Microsoft Corp. has teamed with a group of internetworking and hardware vendors to deliver a new protocol technology that lets remote offices and users access their corporate networks via the Internet.

The new Point-to-Point Tunneling Protocol (PPTP) is a software specification jointly developed by Microsoft, 3Com Corp., Ascend Communications, Inc., ECI Telematics, Inc. and U.S. Robotics Corp.

The benefit to users is that it is less expensive than dedicated leased lines, according to Eric Hinden, a program manager at The Yankee Group, Inc. in Boston.

PPTP lets remote users deploy Windows 95 or Windows NT Workstation operating systems and other PPP-enabled systems to connect directly to the corporate network via a local Internet service provider, said Mike Nash, Microsoft's group product manager for Windows NT.

PPTP builds on the existing PPP, or Point-to-Point Protocol, standard for remote access and uses the authentication and encryption built in to the Windows NT Remote Access Service. That assures users of secure data transmissions over the Internet, Nash said.

Internet services provider UUnet Technologies, Inc. in Fairfax, Va., plans to offer PPTP to customers such as auto manufacturers who might want to share computer-aided design and manufacturing models with their suppliers, said David Foster, UUnet's vice president of business development.

Hedging his bets

One network administrator at a large East Coast financial institution, who requested anonymity, said PPTP sounded like a good way to connect his remote sites.

"But I'm going to wait until PPTP is proven, I don't want to be the pioneer with the arrow in my back," he said.

Hindin said the fledgling PPTP technology could cut businesses' wide-area network costs significantly and reduce network complexity.

"Recurring monthly WAN communications, such as dedicated leased lines, account for 40% to 50% of users' total network ownership costs. The new PPTP technology will eliminate the need to pay toll charges every time a remote user accesses the corporate network," Hindin said.

Another advantage, Hindin said, is that users won't have to learn and use two methods of dial-up access. "Any technology that can reduce network complexity is a positive thing," he added.

The trade-off could come in reliability and quality of service, Hindin said.

Companies that deploy private networks always know exactly how many users are on the network and how much bandwidth is available to individual users.

Remote control

The Point-to-Point Tunneling Protocol is a new technology built on the existing PPP remote access protocol. PPTP lets remote branch offices and telecommuters securely access their corporate networks via the Internet.

Routing

CONTINUED FROM PAGE 1

and have our routers sort out the rest," he said.

Analysts said the two features hold promise for many users.

"SNA shops are consolidating WANs to save money by eliminating redundant WAN links and networking equipment, but they can't do a good job of it without these features," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "We'll see many router vendors support them."

On tap

3Com and Bay last week announced support for HPR and enhancements to DLSw. Although the company wouldn't provide any details, a spokeswoman confirmed Cisco will make an IBM announcement this week that will include HPR.

HPR is said to dramatically improve network performance by rerouting traffic around failed WAN links. It also offers advanced congestion control features that can reduce WAN bandwidth needs while boosting efficiency.

"We're very excited about HPR because we think it can increase our network performance," said Ken Moerman, a systems specialist at First Security Information Technologies, a Salt Lake City subsidiary of First Security Bank. "We're just now playing with HPR in the lab, and we like what we see."

3Com is offering HPR and DLSw in Release 9.0 of its NetBuilder Remote Office multiprotocol router software, which is scheduled to ship on March 29.

Moerman is further along with DLSw, which is enabling his company to merge SNA and LAN networks into one frame-relay network. "We like the features for prioritizing traffic by protocol for transmission. And we've purposely pushed DLSw by trying to force session timeouts but haven't had any," he said.

DLSw helped Paul Grimes merge two separate WANs and add traffic from what could have become a third.

"We had two leased-line networks, a 6,500-device SNA network and a network that supports a computer-aided-design application," said Grimes, who is a telecommunications administrator at the Florida Department of Transportation in Tallahassee. Both networks use Bay routers.

"We were also able to load traffic from Ethernet and Token Ring LANs on the frame-relay network," he said.

Router enhancements

- Lets routers redirect traffic around downed WAN links
- Offers congestion control to cut bandwidth needs and costs
- Gives users the benefits of high-speed, low-delay WAN links such as ATM connections
- Enables users to consolidate SNA, LANs and WANs
- Works with widely proven frame-relay WAN links
- Lets users prioritize traffic by protocol

A new switch couples ATM and TCP/IP in a relatively cheap package. See page 60.

Client/server is dead; long live the intranet

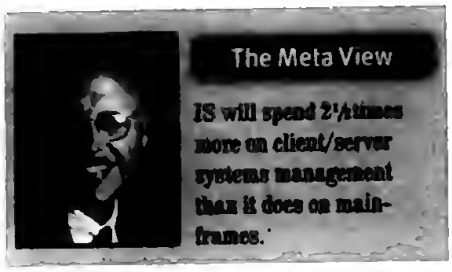
Charles Babcock

Client/server is dead. It's finished. Doomed. It will continue to enjoy currency as a buzzword, but its usefulness as a model for enterprise computing is over. It was just a confused, transitional phase anyway.

What everyone wants to do is illustrated by the Internet: one standards-based, broad bandwidth network, not a mix of networks that may or may not work together. The Internet has powerful servers, each working for thousands of clients. An intranet will serve thousands of employees throughout the company. Data warehousing, which is considered a niche application of database management, is actually one of the first examples of an intranet — a very large server, accessible to a variety of users through standard interfaces.

Hardware and software on intranets will follow a few common standards and may be managed remotely over a network. But then, everything on intranets can be networked. Applications based on languages such as Sun Microsystem's Java and platform-neutral object request brokers will help form this network-centric world.

We are far from such a world today, but IS already is thinking more rigorously about what it allows into its mix of systems. Does it contribute toward building an intranet, or does it add yet another complicating factor? Intranets are still a long way off, but IS is aiming toward the day when it has a set of manageable pieces.



An intranet, of course, can be described as a client/server system because client/server is so loosely defined. But it isn't client/server as we know it today. An intranet is defined more clearly up front, it adheres to a small set of standards, and it scales across the enterprise. It almost certainly will be based primarily on TCP/IP.

Is it the power of the Internet that is pushing this change? No. The Internet's example is a good one, but it doesn't mold to individual business operations or business models. Intranets can be scaled down to fit business needs and adapt to individual organizations. In other words, it's the architecture, not the cyberspace.

The push to move in this direction comes not from the popularity of the Internet, but from the need for a manageable infrastructure. Systems management is becoming the No. 1 IS problem. It will remain a major problem for a very long time, and intranets will take many years to emerge from the chaos.

The client/server mix has worked up to a point, but scaling the mixture enterprisewide and then maintaining high availability are the sticking points. And the Internet illustrates that you don't have to distribute massive amounts of data and compute power — as you must with a client/server architecture. You can concentrate your data and resources on processors that serve many users across a broadband network.

Gartner Group's Igor Stenmark and Bill Malik say, IS organizations will spend 2½ times more on client/server systems management than they do on mainframe systems management. These mounting cost pressures already provide a ruthless rationalizing and simplifying force on IS.

Stenmark and Malik recommend "reducing the complexity of the environment before attempting to manage it," and reducing the complexity is the first step toward establishing an intranet.

Client/server assumed that the compute power and data needed to be distributed close to the end user. So client/server applications are forever trying to manage multiple exchanges across networks and frequently between the desktop and legacy systems.

The intranet presumes that it doesn't matter where on the network the data is located. It assumes the end user has a standard interface with which to access it and a broadband network over which to move it.

Forrester Research used to advise customers on client/network computing, as its advanced form of client/server consulting. It has dropped the term and now refers to "Internet computing," or making use of the Internet-like structures internally and using the Internet as an extension of your infrastructure. This, of course, is an intranet in action.

In many ways, client/server was merely the first tentative step toward an intranet. Thousands of stand-alone PCs came into existence, and client/server followed, trying to hook them up to the infrastructure. In the end, it was the infrastructure that needed changing.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Inside Lines

Routing without routers

ATM switch vendor Newbridge Networks this week will unwrap virtual routing, a software-based feature that is said to provide a less-expensive alternative to high-end stand-alone routers in ATM networks. Virtual routing will be supported in Vivid Version 2.0, which will be available April 15 as a free upgrade to current customers. Others will pay about $2,000 per switched LAN port for virtual routing.

Barksdale barks at Microsoft

In a press conference at last week's Netscape user show, President and CEO Jim Barksdale had something to say about Internet marketing wars with rival Microsoft. Microsoft's move to bundle its oew Web server with Wiodows NT for free could be a violation of antitrust laws, he claimed. "I don't profess to be a lawyer. But if you say you spend a billion and a half dollars on a product line and then give it away, you are pricing below your cost. And that, I believe, is against the law." Microsoft has previously denied any anticompetitive tactics.

Maybe another time

SAP was supposed to announce a long-promised mainframe versioo of its R/3 client/server software at the CeBit trade show this month in Germany, but sources said those plans were shelved at the last minute. SAP was worried that the mainframe release might overshadow other R/3-related announcements slated for CeBit, the sources said. R/3 will still find its way onto big iron eventually, but IBM might have to wait a bit longer before it can bask in SAP's client/server glow

Let the games continue

Persistent on-the-job game players have found a flaw in DVD Software's UoGame, which is marketed as a "PC games elimination utility." A network administrator in California discovered that persevering players on his network had outfoxed the network-policing product by compressing their games into zipped files that UnGame didn't recognize. An official at DVD Software said the flaw has been "partly taken care of" and that the May release should completely close this loophole. Until then, network administrators had better check closely — there still may be a backroom card game going on.

The 5th Wave by Rich Tennant

Lifestyles of the young, rich and famous

What does Marc Andreessen, who founded Netscape, do on a Saturday afternoon? He cruises bookstores, for starters. We recently spotted Andreessen browsing through some Internet books in a Palo Alto, Calif., shop. We sauntered over waving a thin tome titled something like *How to Build a Business on the Internet* and asked if he was familiar with the concept. "Yeah, I've heard about it," he said, then walked away laughing.

Tie a blue ribbon 'round that old PC

Web activists are banding together to fight the Communications Decency Act by asking Web pages to display a blue ribbon. The Blue Ribboo Campaign for on-line freedom of speech, press and association is garnering the support of the Electronic Frontier Foundation and the likes of Microsoft and Apple. The group's Web site (www.eff.org/blueribbon.html) includes a list of Web sites that would be banned under the new legislation.

IBM grandmaster Lou Gerstner blames human error for the embarrassing loss that the computer giant's Deep Blue supercomputer suffered to Garry Kasparov in a chess match last month. "The computer really did a lot better than some of our people who were handling the computer. We just have to automate the game more," Gerstner griped at a meeting with analysts last week. As usual in sporting circles, the coaches take the heat for the high-priced talent that couldn't get the job done. Turn up the heat at Computerworld *with your news items or tips, by calling our 24-hour voice-mail tip line at (508) 820-8555. News editor Patricia Keefe can be reached by phone at (508) 820-8183 or via the Internet at tish_keefe@cw.com.*

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and business solutions from Software 2000* that point him in the right direction.

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Behind Bill Creekmuir's success in keeping LADD Furniture on the cutting edge

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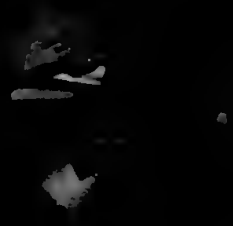

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